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A

Dictionary of Typography

AND

ITS ACCESSORY ARTS.

BY

JOHN SOUTHWARD.

Presented to the Subscribers of the "Printers' Register."

1870-1871.

London:

JOSEPH M. POWELL,

"PRINTERS' REGISTER" OFFICE, 3, BOUVERIE STREET, E.C.

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List of Authorities.

Among the various works on the Art of Printing, consulted in the compilation of this Dictionary, may be named the following:—

- Abridgments of Specifications relating to Printing.
Andrews's History of British Journalism.
Annales de la Typographie Française et étrangère.
Annales de l'Imprimerie.
Annals of Our Time.
Annuaire de la Librairie et de l'Imprimerie.
Babbage's Economy of Machinery and Manufactures.
Ballhorn's Grammatography.
Beadnell's Guide to Typography.
Biographical Memoirs of William Ged.
Buckingham's Personal Memoirs and Recollections of Editorial Life.
Buckingham's Specimens of Newspaper Literature.
Burton's Book Hunter.
Camus's Histoire et procédés du Polytype et du Stéréotype.
Chambers's Encyclopædia. Printing—vol. vii, p. 764. Type—vol. ix, p. 606. Stereotyping—vol. ix, p. 117. Newspapers—vol. vi, p. 748.
Chevallier's l'Origine de l'Imprimerie de Paris.
Cowie's Printer's Pocket Book and Manual.
Crapelet's De la profession d'Imprimeur.
Crapelet's Des Progrès de l'Imprimerie en France.
Crapelet's Etudes Pratiques et Littéraires sur la Typographie.
Crisp's Printer's Business Guide.
De Vinne's Printers' Price List.
Dibdin's Bibliomania.
Dictionnaire Encyclopédique. Typographie, p. 1407.
Dictionnaire Universel. Impression p. 844. Imprimerie p. 845. Imprimeur—p. 846. Presse—p. 1348. Lettre—p. 926. Typographie—p. 1684. Presse—p. 1348. Journaux—p. 887. Moniteur—p. 1068.
Dudin's l'Art du Relieur doreur de Livres.
Encyclopædia Britannica. Printing—vol. xviii, p. 537.
Encyclopædia Metropolitana. Art. Typography.
Encyclopédie Méthodique. L'Imprimerie—v. iii, p. 537. Fonderie—v. i, p. 377. Papier—v. v, p. 493.
English Cyclopædia. Printing—vol. v, p. 744.
Fournier's Caractères de l'Imprimerie.
Fournier's Manuel Typographique.
Great Exhibition of 1851 at London. Reports of Juries.
Handbook of Graphotype.
Haosard's Biographical Memoir.
Hansard's Typographia.
Haydn's Dictionary of Dates.
History of Ink.
Houghton's Printers' Practical Every-day Book.
Humphrey's History of the Art of Printing.
Hunt's Fourth Estate.
International Exhibition of 1862. Reports of Juries, London, 1863.
Jackson & Chatto's Treatise on Wood Engraving.
Johnson's Introduction to Logography.
Johnson's Typographia.
Knight's Caxton.
Knight's Knowledge is Power.
Knight's Old Printer and the Modern Press.
London Encyclopædia. Printing—vol. xviii, p. 84.
MacKellar's American Printer.
Marahren's Handbuch der Typographie.
Maverick's Henry J. Raymond and the New York Press.
McCreery's Press, a Poem.
Morgan's Dictionary of Terms used in Printing.
Moxon's Mechanick Exercises.
Munsell's History and Chronology of Paper and Paper Making.
National Cyclopædia. Printing—vol. ix, p. 847. Printing Press—vol. ix, p. 849. Printing Machine—vol. ix, p. 851.
New American Cyclopædia. Printing—vol. xiii, p. 585. Type Founding—vol. xv, p. 688. Newspapers—vol. xii, 306.
Newspaper Press Directory.
Nicholson's Manual of the Art of Bookbinding.
Nouveau Manuel complet de l'Imprimeur Lithographe.
Paper Mills Directory.
Penny Cyclopædia. Printing—vol. xix, p. 14.
Renouard's Annales de l'Imprimerie des Aldes.
Revista Bibliographica, Madrid.
Ruse & Straker's Printing and its Accessories.
Savage's Account of the London Daily Newspapers.
Savage's Dictionary of the Art of Printing.
Specimen des Caractères Typographiques or Specimens of Old Printing Types in the possession of John Enschedé & Sons, Haarlem, 4to, 1789.
Specimen of the various sorts of Printing Types belonging to the University of Oxford, at the Clarendon Printing House, 1786.
Speirs's Electrotyper's Manual.
Stower's Printer's Grammar.
Stower's Printer's Price Book.
The Stationer's Handbook.
Timperley's Encyclopædia of Literary and Typographical Anecdote.
Timperley's Printer's Manual.
Tobitt's Combination Type.
Triibner's Guide to American Literature.
Typographia Española.
Versuch den Ursprung der Spielkarten, die Einführung des Leinenpapiers, und den Anfang des Holzschnidekunst in Europa zu erforschen.
Vita del Cavalier Giambattista Bodoni, Tipografo.
Vocabulaire des Termes usés dans l'Imprimerie.
Walter's Address to the Public, showing the great Improvement he has made in the Art of Printing, by Logographic Arrangements.
Walter's Miscellanies in Prose and Verse, intended as a Specimen of the Types at the Logographic Printing Office.
Wilson's Treatise on English Punctuation.

The Compiler desires to acknowledge the great assistance rendered to him by Mr. Sweet, of "The Times" Office; Mr. J. B. Cursons; Mr. P. M. Shanks; and Mr. Joseph M. Powell.

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DICTIONARY OF TYPOGRAPHY

AND ITS ACCESSORY ARTS.

A List of the Authorities consulted in the compilation of this Dictionary will be given in full when the work is completed.

A.

A THE first letter of the English Alphabet. Signature A is the first sheet of every work, and is called the Title-sheet; but the letter itself is never inserted at foot, as the title-page sufficiently indicates how the sheet is to be collated and folded; B being the first signature commencing the body of a work. In Parliamentary Bills, Chancery Bills, and similar work, however, it is usual and necessary to insert the letter. (See SIGNATURES.)

Abbreviations.—In the primitive times of Printing most Latin words were abbreviated, in order to save paper, composition, and presswork. As reading, however, became more general, they were by degrees abolished, except in legal works. The present practice in regard to abbreviations,—as in side-notes, &c.,—is not to abridge a word at the end of a syllable, but always to annex one or more letters of the next syllable; and always to carry the reading part so far that it cannot be mistaken for any other word. A vast number of abbreviations are in use at present, such as *Ps.* for Psalms; *Jan.* for January; *A.B.* for *Artium Baccalureus* (Bachelor of Arts); *L.S.* for *locus sigilli*; *Juv.* for *Juvenalis*, &c. A complete list of these will be found in "The Guide to Typography," by Henry Beadnell, 1859, Vol. I., p. 199, *et seq.*

Accents.—"Certain marks over vowels to direct the modulation of the voice. In the English language they are chiefly used in Spelling-books or Dictionaries, to mark the syllables, and where to lay particular stress in pronunciation."—*Murray*. Those letters which are called by printers *Accented*, are the five vowels, marked as follows:—

Acute . . .	<i>á é í ó ú</i>	Long . . .	<i>ā ē ī ō ū</i>
Grave . . .	<i>à è ì ò ù</i>	Short . . .	<i>ă ě ĭ ȝ ŭ</i>
Circumflex . . .	<i>â ê î ô û</i>	Dieresis . . .	<i>ä ë ï ű ü</i>

There is no pure English word that requires an accent. Some reckon the French *ç* and the Spanish *ñ*, and other letters used in foreign languages, as accented letters. The grave accent is, in English, sometimes used in poetry to prevent the omission of sounding a syllable, and the metre thereby being impaired. Similarly, the dieresis is sometimes employed in words like *Coöperate*, instead of the hyphen; but this plan is not adopted by printers of the present day.

Account-line.—This is a term used in a Compositor's bill for the week; it is supposed to represent the value of certain portions of the work really executed, but which from being in an unfinished state cannot be entered with a specific charge: it is therefore the custom to charge "on account" somewhere about the estimated value of the work done, and which is deducted, week after week, until the general bill is made out, when the account is balanced. When travelling on this "line," *horseshesh* is very often eaten.—*Straker*.

Acts of Parliament relating to Printers.—To give anything like an abstract of the immense number of Acts of Parliament which relate to printers would be quite impossible in our limited space. The most important at present in force are, the Libel Acts, the Factory Acts, the Copyright Acts, and the recent Newspaper, Pamphlets, &c. Act, which will be found in alphabetical order. There are various restrictions on the sale and use of Printing Presses, which have been imposed in consequence of the extended and secret influence often exercised by them; and the law of treason and libel is intimately associated with

the Press. The most important of these will be found under the head of "Newspapers." Printers must keep a copy of every paper they print for hire or reward, and must endorse thereon the name of the person so employing them, under a penalty of £50. Every printer who shall print a book or paper without having the printer's name and address on the first or last leaf thereof, shall, by the Act 2 & 3 Vic., s. 2, forfeit £5 for every copy printed, but the penalty may be mitigated to £5. It follows from the enactments, that a printer cannot recover his expenses for labour and materials in printing a work unless he has complied with the statutory requirements. With regard to the printing trade, many customs prevail which do not differ in point of law from the customs affecting other trades, it being the rule that customs of a peculiar trade are binding unless specially excluded. The latest Act is that of 32 and 33 Victoria, cap. 14, by which persons are liable to a penalty of £1 ls. if they use the Royal Arms, or any other armorial bearings, crests, or ensigns—by whatever name the same shall be called,—on their paper bags, wrappers, or bills. [Printers are therefore advised to caution their customers against using any of the above devices.]

Admiration (Note of).—This is otherwise called the Sign of Exclamation, and is formed thus (!). It is inserted wherever surprise, astonishment, rapture, and similar sudden emotions of the mind are expressed. It is also placed after the particles, *Oh! ah! alas!*—though the last is not always of that force to require it, and may be softened by a comma.

Advertisements.—The Parliamentary newspaper, the *Mercurius Politicus*, for January, 1652, contains an advertisement, probably the first published in England. The Advertisement Duty was repealed in 1853, by 16 & 17 Vic., c. 63. An advertisement is defined as "the public notification of a fact." As early as 1710 Addison devoted a number (224) of the *Tatler* to a review of the current advertisements of his time, their objects, their tendency, the *ad captandum* style in which they were drawn up and printed, "with little cuts and figures," with which a provincial editor would scarcely disfigure his journal at present. "As we read," says a recent periodical writer, "in the old musty files of papers, those naïve announcements, the very hum of bygone generations seems to rise to the ear. The chapman exhibits his quaint wares, the mountebank capers again upon the stage, we have the living portrait of the highwayman flying from justice, we see the old china auction thronged with ladies of quality with their attendant negro boys, or those 'by inch of candle-light' forming many a Schalken-like picture of light and shade; or, later still we have Hogarthian sketches of the young bloods who swelled of old along Pall Mall. We trace the moving panorama of men and manners up to our own demonstrative but more earnest times, and these cabinet pictures are the very daguerreotypes cast by the age which they exhibit, not done for effect, but faithful reflections of those insignificant items of life and things, too small, it would seem, for the generalizing eye of the historian, however necessary to clothe and fill the dry bones of his history." A very interesting article on Advertising, Advertisers, and Advertising Mediums, will be found in "The New American Cyclopaedia" (New York: Appleton and Co.), 1858, Vol. I., p. 142.

Albion.—The name of a style of Type in vogue several years ago. The following is a specimen:—

METROPOLITAN ASSURANCE

It was superseded by the Clarendon and Antique faces; but it has been again lately introduced with great effect.

Albion Press.—An Iron Press invented by Mr. R. C. Cope. It is of great power, and smooth and easy in working. It is much esteemed for its extreme lightness; it runs very easily, the pull is short, the power great, and the means whereby it is obtained so simple that there is little fear of the Press getting out of order. It is very easily taken down for cleaning, and put up again. The power is gained by causing an inclined piece of steel to become perpendicular; in so doing the platen is forced down, and the impression takes place at the moment the piece of steel is brought into a vertical position. On the return of the bar, the platen is raised by a spiral spring fixed on the head of the press.

Aldine.—The name of a style of type, of which the following is a specimen:—

DICTIONARY OF TYPOGRAPHY.

Aldus. This celebrated printer, otherwise known as Aldus Manutius, was a native of Rome. He erected a printing-office at Venice in 1495, and introduced a neater cut of Roman types, and it is to him, or rather to the engraver, Francesco of Bologna, that we owe the types called by the Italians *Corsivi*, and known to us as *Italics*, which Aldus used for the first time in 1501. (See "Annales de l'Imprimerie des Aldes," par A. Renouard. Paris, 1831.) Amongst other improvements in printing, this eminent man corrected and enlarged the punctuation, by giving a better shape to the comma, adding the semi-colon, and assigning to the points a more proper place.

Algebraic Marks.—A knowledge of the proper meaning of these can only be acquired by the study of mathematics, but the following statement of the names of them will be useful to reading-boys and others who are required to pronounce them:—

+ plus	° degree	:: so is	× by (multiplication)
÷ division	− minus	∥ parallel	: to (in proportion)
∴ therefore	= equal	√ root	' minute, " second

Anastatic Printing (from *Anastasis*, resuscitation, raising up again).—This process for producing copies of manuscript, or printed documents, or engravings, that can with difficulty be detected from the originals, was invented by M. Baldermus, at Erfurt about 1811. It was soon after made public, and Faraday explained the process at the Royal Institution, April 25, 1845. It has since transpired that a similar process had been employed in England some time before M. Baldermus's invention was made known. The invention was improved and extended by Strickland and Delamotte in 1848. The process is analogous to lithography, but a zinc plate is employed instead of a stone. A printed page, an engraving, or a bank note may be exactly copied by this invention. Moisten the printed paper with dilute phosphoric acid, lay it downwards on a clean sheet of zinc, and put it into a press for a short time. The acid of the unprinted parts etches the zinc beneath, while the printed part also sets off on the zinc, and thus produces a reverse copy of the printing. Wash the plate with an acid solution of gum, and it will be ready for use. The plate may now be treated as the stone in lithographic printing; first damped and then rolled. The affinity of the ink to the letters already "set off" on the plate, and the repulsion of the other parts of the plate, cause the lines of the device to take the ink, but the other parts remain clean; the printing then follows.—See "A Brief Description of the Art of Anastatic Printing, with illustrative specimens and full directions." By S. H. Cowell. Ipswich: 1868.

Annals of Printing. The following are the dates of the principal events in connection with the History of Printing:—

- 1451.—Printing introduced at Harlem by John Gutenberg.
- 1455.—The Mazarin Bible is printed by Gutenberg.
- 1457.—Faust and Schœffer print the Psalter.
- 1462.—Count Adolphus of Nassau takes Mentz, and compels the printers to remove to other towns, whereby the art is diffused.
- 1465.—Printing introduced at Subiaco, in Italy. The first book printed here contained the Greek characters among its quotations.
- 1466.—Sweynheym and Pannartz establish the first press at Rome.
- 1467.—They introduce Roman types.

- 1468.—A book is said to have been printed at Oxford in this year, but the Librarian of the British Museum has satisfactorily proved it to be erroneous.
- 1469.—The first press is established at Paris, being the second in France, the first being introduced into Tours two years earlier.
- 1470.—"Signatures" are first employed by Antonio Zarot, at Milan.
- 1471.—Caxton, who sets up the first press in England, at Westminster, prints the "Game of Chesse," which was finished in 1474.
- 1475.—Printing is introduced into Spain, at Barcelona. The first printed Almanack was composed by Regiomontanus, who received a munificent donation from the King of Hungary for his trouble.
- 1476.—The first work wholly in Greek type is printed at Milan.
- 1488.—The first Bible in Hebrew characters is printed at Sorocino in Italy.
- 1495.—The art of printing Music is introduced into England.
- 1500.—Aldus Manutius invents Italic type about this year. The first patent of King's Printer was granted to Richard Pinson by Henry VII. He was afterwards succeeded by Thomas Berthelet.
- 1501.—Printing is introduced into Scotland.
- 1515.—Ottavio de Petrucci invents Music Printing from Metal Types.
- 1526.—The New Testament, being the first English Bible, is printed at Antwerp.
- 1539.—The Great, or Cromwell's Bible, the first printed by authority in England.
- 1540.—The "Byrth of Mankynd," the earliest English work in which Copper-plate Printing is employed, is printed.
- 1542.—The "Imprimerie Royale" is established at Paris by Francis I.
- 1551.—Humphrey Powell introduces printing into Ireland.
- 1560.—A Russian merchant introduced the art into that country, but it was some time before any progress was made.
- 1637.—By order of the Star-Chamber the businesses of Printer and Type Founder are ordered to be kept distinct, and only four Type Founders are permitted in the Kingdom.
- 1639.—Printing first performed in the United States of America by the Rev. Jesse Glover. It had previously been introduced by Stephen Daye, from London, in Massachusetts, but no work had been performed.
- 1720.—Type-founding is first practised with success in England by William Caslon.
- 1725.—Stereotype-printing is invented by Ged, of Edinburgh.
- 1726.—Printing is introduced into Turkey.
- 1776.—The printing of Maps with Moveable Types is invented by Conrad Sweynheym.
- 1778.—Henry Johnson invents Logographic Printing.
- 1780.—Tilloch invents an improved system of Stereotype.
- 1784.—Valentino Haüy invents Embossed Typography and applies it to Printing Books for the Blind.
- 1785.—The *Daily Universal Register* (afterwards *The Times*) is brought out, January 13, as a specimen of Logographic Printing.
- 1790.—W. Nicholson Patents a Self-acting Printing Machine.
- 1800.—Lord Stanhope invents the Stanhope Press.
- 1804.—König directs his attention towards the improvement of the Printing Press.
- 1811.—The sheet of the "Annual Register" for 1810, printed in April, is the first work printed by a machine.
- 1814.—*The Times* is the first Steam-printed Newspaper. König's machine being the first apparatus employed, Nov. 28th.
- 1815.—Composition Balls for Inking Type are invented by Benjamin Franklin. Copper commences his inventions connected with the Press, and introduces the Inking Roller.
- 1817.—R. Ackerman introduces Lithographic Printing into England.

1818.—George Clymer, of Philadelphia, patents the Columbian Press in London.

Applegath takes out a Patent for Improvements in Cylindrical Printing Machines.

1827.—Gall, of Edinburgh, invents a system of Printing for the Blind.

1840.—Anastatic Printing introduced.

1852.—Andrew Worsing, of Vienna, invents Nature Printing.

1858.—Hoe's American Printing Machine is introduced into England.

1862.—Grüner's Folding, Stitching, and Glazing Machine introduced into England.

1863.—Bonelli's Printing Telegraph invented.

The *Printers' Register* (proprietor, Mr. Jos. M. Powell) is established.

1869.—Marinoni's French Printing Machines are introduced into England.

Bullock's American Printing Machine is introduced into England, and used for the first time in printing the *London Daily Telegraph* in December.

Antique.—The name of a fancy type, of which the following is a specimen:—

ANTIQUITIES IN THE BRITISH MUSEUM.

A.P.—A technical abbreviation for Author's Proof.

Apostrophe.—The apostrophe (') generally denotes the possessive case of the noun-substantive; or, the omission of one or more letters in a word; and is doubled at the end of quotations which are commenced by inverted commas.

Apprentice.—An apprentice is, a person described in law books as a species of servant, and so called from the French verb *apprendre*, to learn, because he is bound by indenture to serve a master for a certain term, receiving in return for his services instruction in his master's trade, profession, or art; the master, on the other hand, contracting to instruct the apprentice and, according to the nature of the agreement, to provide him with food and clothing, and to pay him small wages. Sometimes a premium is paid by the apprentice, or on his behalf, to his master. By a provision of the 5th Eliz., c. 4, which remained in force until a recent period, it was in general required that every person exercising a trade in England should have previously served as apprentice to it for seven years, but by 54 George III. c. 96 that provision was abolished. The term of apprenticeship is now determined by the mutual convenience of the contracting parties and the custom of the trade. A mere agreement does not constitute an apprenticeship; there must be regular indentures formally entered into.—See "*Chambers's Encyclopædia*," Vol. I., p. 331.

Arabesque.—The name given to a fancy fount, of which the following is a specimen:—

Specimen of an original Arabesque character.

Art of Printing.—The art of producing impressions from characters or figures on paper or any other substance. The art of Block Printing was known in China as early as B.C. 202, and is said to have been introduced from that country into Europe by Marco Polo in the latter part of the 15th century. It was first employed in the manufacture of playing-cards and little books of devotion, consisting in most cases of only one page, illustrated by rude pictures, and containing short scripture texts. The earliest date on these books is 1423. The invention of printing with moveable types is claimed for several persons, the chief of whom are Lawrence Coster (1370-1440), of Haarlem; John Gutenberg, born at Mentz (Mayence) about 1400, settled at Strasburg in 1424, returned to Mentz in 1441, dying there February 24, 1468; John Mentelin (1410-78), of Strasburg; John Faust, who died about 1490; and Peter Schœffer or Schoffer, of Mentz, who died about 1502. Coster is said to have printed by means of separate wooden types, tied together with thread, as early as 1430, but the evidence is doubtful. John Gutenberg, or Geinsfleisch, established himself at Mentz in 1441, and printed two small books in 1442. In 1443 he took John Fust or Faust into

partnership, and in 1450 he first employed cut-metal types in the production of the Mazarin Bible, which appeared five years later. About the same time Peter Schœffer, the servant of Gutenberg and Faust, invented cast metal types, which were first used in 1459. The Gothic types, or "Black" letter, gave place to Roman letters towards the end of the 16th century. To secure good printing the following points are essential:—1. The types carefully set, fixed with precision in formes, rendered level all over, so that all parts may be pressed alike, and the whole properly cleaned by a wash of potash ley. 2. A uniform inking of the surface, to give uniformity of colour. 3. The paper damped equally, neither too much nor too little, so as to take an impression easily and evenly. 4. An equable, firm, and smart pressure, and with that degree of steadiness in the mechanism that the sheet shall touch and leave the types without shaking and blurring. 5. Care in adjusting the pointing or gauge, so that perfect register may be secured in printing the second side. 7. The laying of small patches on the tympan, where, from any inequality, it seems necessary to bring the pressing surface to a thorough equality.—*Chambers*.

Ascending Letters are, the Roman and Italic capitals; in the lower-case, *b, d, f, h, i, k, l, t*.

Asterisk.—The Asterisk (*) is the chief of the reference-marks, which presents itself to the eye more readily than the others, on account of its having its figure on the top, and leaving a blank below, which makes it a superior. It sometimes denotes an hiatus, in which case the number of asterisks is multiplied according to the largeness of the chasm. Arranged in this form (***) they are used in circulars and handbills to draw attention to some particular announcement. Technically, they are called *Stars*.

Astronomical Signs will be found under the heading of SIGNS. They will also be found in any good work on Astronomy, or their forms and significations may be learned from "*Dietrichsen and Hannay's Almanack*."

Authors' Marks are the alterations made by the author or publisher after the work has been duly composed according to copy.

Author's Proof.—The proof with the Author's corrections marked in it.

B.

Back Boxes.—The whole of the boxes in the upper-case not appropriated to either capitals, small capitals, or figures, are generally so termed, whether they happen to be in the front or back part of the case; as are also the small boxes on the outer portion of the lower-case.

Backs.—In the imposition of a form, the first division to the left hand; that is, between the first and last pages. The next division is the gutter; the next, the back, and so on.

Backing.—In Electrotyping, is the process of filling-in the back of the electrotype with metal.

Bake.—This is a term used in those instances where, when letter is rinsed or laid-up for distribution, it adheres so closely together that it is separated with difficulty; the compositor's fingers are made sore by pressing the types against the edge of the cases in order to distribute them into the proper boxes. All new letter is difficult to separate and distribute if it remains long in chase after it is worked off; from the lye penetrating the interstices of the letters. New type should always be saturated with a solution of soft soap and water before being laid into case. This not only prevents baking, but takes off the extreme brightness which is so unpleasant to the eye, and renders the type better to feel with the fingers. Old type will become baked if the ink is not properly washed off, and well rinsed before the types are put away.

Balls.—Balls made either of skins or of composition similar to roller composition, were in use previous to the invention of rollers. When composition rollers were introduced into London in 1815, they were violently opposed by some masters and by many pressmen. They were made of molasses, glue, and a por-

tion of tar, boiled together into a proper constituency. Johnson, writing in his "Typographia" (1821), says:—"With respect to the rollers our ideas still remain the same, having pronounced (long before having seen them in action) that they would *not* execute the work equal to Balls; this opinion time has fully verified; we are ready to admit their excellence for heavy forms and the general run of work, but not for fine work or wood engravings, for neither of which are they so well adapted as the balls; as to the last they are totally unfit to produce any impressions worthy of notice!" The *Ball-knife* was a blunt knife used to scrape balls; *Ball-nails*, the tacks used in knocking-up balls.

Bank and Horse.—The Bank is a deal table, usually 3 feet 4 inches long, 22 inches wide, and 3 feet high, used by pressmen to keep their paper upon. About five inches from the bottom a board is placed within two inches of the length and breadth of the bank, and fastened to the legs, which serves as a convenient shelf for the pressmen to lay their worked-off heaps upon. The paper Horse of a corresponding size is made of deal, 2 feet 2 inches long and 20 inches wide, forming an angle of 45 degrees, 6 inches of the higher end of it rising nearly to a perpendicular. The horse receives the wet paper, and is placed on the bank near the tympan.

Bar.—That portion of the press which, in connection with the handle, acts as a lever for bringing down the platen and effecting the impression required.

Baskerville Machine.—The name of a gripper cylinder machine very popular a few years ago.

Bastard Founts.—Founts of type which are cast with a small face on a large body, such as a Pica face on English, Brevier on Bourgeois. The object in casting them thus was to obviate the use of leads.

Batter.—To injure the face of the type in any way.

Bearer.—A piece of reglet, cork, india rubber, or a piece of wood or other furniture, to bear the impression off a blank page, to keep the margin of the paper from being blacked by the chase, or to surround very small forms and thus prevent them causing the platen of a press to be strained.

Beard of a Letter.—The outer angle of the square shoulder of the shank, which reaches almost to the face of the letter and commonly scraped off by the foundry, serving to leave a white space between the lower part of the face of the type and the top part of any ascending letter which may happen to come in the line following.

Beating.—Before the use of rollers, when balls were employed, the process of inking the type was called beating. It formed a very important part of a pressman's business, the great object being to secure uniformity of colour. The plan adopted was to lay the balls on the left hand near corner of the form while the tympan was being lifted, they were then carried over to the near right hand corner. In beating over the form the elbows had to be kept rather inward and the ball-stock handle inclining outward, in order that the balls might be perfectly upright. The beater then went up the right hand side of the form and returned, leaving off at the left hand near corner, taking care to make the form feel the force of the balls by beating hard and close. The balls were kept constantly turning round in the hands.

Bed of the Frame.—The platform or ledge at the bottom.

Begin Even.—See MAKE EVEN.

Bible Text. This type, otherwise Great Primer, was so called because it was largely used in printing the Bible.

Bionvenue.—An obsolete term, by which was meant, formerly, the fee paid on admittance into a "chapel."

Bill of Type.—A statement of the proportionate number of letters in a fount of type of a given weight. See TYPE-FOUNDING.

Binds.—When the furniture is carelessly put together so that it overlaps, and the pressure of the quoin is exerted not on the type but on the furniture.

Bit.—When the entire impression of the page is prevented by the frisket not being sufficiently cut out.

Black Letter.—Otherwise Gothic, or Old English, *q. v.*

Blaew. William Jansen Blaew, the inventor of the press which bears his name, was a native of Amsterdam. Experiencing the inconveniences attending all the presses in use in his time he caused nine new presses to be made, each of which he called by the name of one of the muses. As the excellence of these improvements soon became known to other printing houses, they were soon imitated, and in the course of a few years were almost general throughout the Low Countries, and from thence they were introduced into England. He died at Amsterdam in 1638, aged 67. The peculiarity of the Blaew Press, at the time of its invention was: The carriage holding the form was wound below the point of pressure, which was given, by moving a handle attached to a screw hanging in a beam having a spring, which spring caused the screw to fly back as soon as the impression was given. An engraving of this press will be found in "Johnson's Typographia," Vol. II, p. 501.

Blankots.—Used to break the force of the platen upon the type, and by their elasticity to cause the paper more readily to adapt itself to the surface of the type. Welch flannel was formerly used, but the fine printers substituted broad cloth; within the last generation, however, a superior article has been manufactured specially for the purpose, and of different qualities suitable for every description of work.

Blank Lines.—See WHITE LINES.

Blank Pages.—Pages on which no matter appears.

Blank Tables.—Tables in which only the headings are printed, leaving the columns to be filled up with the pen.

Blocked Up.—Letter is said to be blocked up when the whole of it is composed and none can be sent to press so as to proceed with the work, owing to the author not returning the proofs regularly, the proofs not being read up, other work employing the same type, non-attendance of compositors, scarcity of sorts, pressmen or machinemmen not being able to work, &c.—*Straker.*

Block Printing.—There is a very unique and curious work on this subject in the British Museum, entitled "Biographical Memoirs of William Ged, including a particular account of his progress in the art of Block-printing."

Board Rack.—An arrangement of strong boards, with ledges nailed on the inside of the two sides, to slide letter-boards in. They are used for keeping standing pages and jobs more out of the way.

Bodkin.—A pointed steel instrument used to pick wrong letters out of a page in correcting.

Body of the Letter.—The shank of the letter.

Body of the Work.—The subject-matter of a work is thus termed, to distinguish it from the preface, introduction, notes, index, &c.

Bolster.—A piece of wood placed between the ribs of a press to prevent the table running out too far, and to ease the sudden strain which would otherwise be caused on the girtling.

Bolts. The furniture which forms the margin at the heads of the pages in the off-cut in a form of twelves.

Botched.—Carelessly or badly done work.

Book-work.—That portion of the printing business which is connected with the printing of books, as distinguished from jobbing and news-work. Previous to the commencement of the composition of any work, a *Direction Paper* should be given to the clicker for his instructions and to secure uniformity in the style of the composition. It should state distinctly the exact name of the work; for whom printed; when ordered; estimated size (— sheets of — pp. each); the even head-lines; and the odd head-lines. It should also be distinctly understood whether the author's punctuation and capitals are to be followed; and when the work is required to be completed. It is also usual to give

the following instructions:—The dimensions of the page; the size and style of the type in which are to be set the texts, extracts, notes, side notes, incut notes, chapter headings, and head-lines; with the thickness of the lead for the text, extracts, and notes respectively. These matters once definitely arranged, much trouble, annoyance, and expense are saved. Book-work, says Houghton, in his "Printer's Practical Every-day Book," is that branch of case in which all the matter composed is divided into pages and each progressively numbered and placed so as to fall, fold, and read in successive order when printed. It extends to a large description of work, and embraces every sized page into which a sheet of printing paper can be folded without waste. The sizes are both regular and irregular, according to the manner in which the sheet is folded. The former includes those which double their number the first and every subsequent fold of the sheet, such as folio, quarto, octavo, sixteens, thirty-two's, &c.; the latter those which fold into odd numbers before they double into the required size, such as twelves, eighteens, twenties, twenty-fours, thirty-sixes, &c. It is the branch of the business which requires the greatest care and the largest amount of knowledge, as well as the best taste. It is divided thus: Casting-off copy; composing; making-up; imposing—each of which subjects will be referred to in its proper place. The great excellences which should characterise book-work more especially than any other class of work are, correct punctuation, uniform capitalising, proper divisions of words, and even spacing. The order in which the different parts of a book follow each other, is the half or bastard title, the title, advertisement, preface, contents, then the text, and finally the index.

Bottle-arsed.—A type that is wider at the bottom than at the top.

Bottle-necked.—A type that is thicker at the top than at the bottom. Types are now cast and finished with such precision that this and the preceding terms have become almost obsolete.

Bottom Line.—The last line of the page, or that immediately preceding the signature or white line.

Bourgeois.—The name of this letter indicates that it was originated in France; although type of this body is now called Gaillarde by French printers. Two lines of this letter are equal to one line of Great Primer, or four lines of Diamond.

Bow the Letter.—This term was formerly applied to the bending of the bad letters taken from a forme in correcting, lest they be used again. The best plan, however, is to break all that are defective, so that they may be placed in the "sboe" at once, and that time may not be afterwards wasted in weeding them out of the forme.

Boxes.—The compartments in a case, in which the several varieties of letters are kept. Thus that in which the A is kept is called the A box, and so on with all the rest.

Box it up.—To enclose any figure or other work within a border of brass rule.

Box-wood.—A firm, fine-grained wood, used in engraving. As it is difficult to procure very large pieces of this wood, owing to the small circumference of the box-tree, an ingenious method of holding several blocks together in order to produce engravings of an extraordinary size. This is done by means of screws inserted at the back of the block and fastened by nuts. Great care must be used with bolted blocks not to let them get wet, as in drying they are liable to warp and expose the joints. After being used for printing they should be well washed with turpentine and placed carefully in a dry cupboard free from heat. Large blocks should be stood on end to prevent warping.—(See ENGRAVING.)

Braces.—These are chiefly used in tables of account and in similar matter that consists of a variety of articles which would require much circumlocution to distinguish were it not for the adoption of the tabular method. Braces stand before and keep together such articles as are of the same import, and are the subdivisions of the preceding articles. They sometimes stand after, and keep together, such articles as make above one line, and have either

pecuniary, mercantile, or other denominations after them, which are justified to answer to the middle of the brace. The bracing side of a brace is always turned to that part of an article which makes the most lines. Braces are generally cast to two, three, and four ems, but are made larger if so ordered. Middles and corners and metal rules are used when the brace is required to extend over any considerable space.

Branching out.—The insertion of leads, reglets, or white-lines, in titles or jobs, so as to open or extend the matter.

Brass Rules.—Thin strips of metal, of the height of type, used for forming lines, and generally manufactured in lengths of 16 or 24 inches, and of various thicknesses, corresponding to the thickness of leads, and of various shades of breadth or darkness. They are made either single, double, triple, &c., are also either plain, curved, waved, dotted, or made to various fanciful designs. The practice of cutting-up rule to any necessary size, or according to the momentary caprice of the compositor, gives rise to great waste, both of time and material. Several years ago it was suggested by Mr. T. S. Houghton, of Preston, that rule should be cut up to certain specified lengths, and the manufacturers now send it out in accordance with this suggestion. Mr. Houghton's "Printer's Everyday Book" contains some useful information on this subject.

Brass Rule Cases.—Cases made specially for holding the various lengths of rules.

Brass Rule Cutter.—An apparatus for cutting-up brass rule with greater readiness and accuracy than with the shears.

Brass Space Lines.—These answer the same purpose as leads; they are now in use on all the London morning newspapers, and effect a great saving over the leads, as they cannot be broken and do not contract in stereotyping. One firm is said to save £100 a year by using them.

Brayer.—A wooden or glass rubber, flat at the bottom, used to bray or spread out ink on the inking-table.

Break Line.—A short line; the end of a paragraph.

Brevier.—A type which took its name from the Breviaries, which were usually printed in this character. Brevier is a size larger than Minion, and smaller than Bourgeois. There are 112½ lines to the foot.

Brilliant.—The smallest type that has yet been cast. It is about half the depth of Minion.

Bring Up.—To bring up a forme is to place overlays on those parts in which the impression is defective, and to cut away those portions in which it is too heavy, so as to equalise the pressure and colour over the whole forme.

Broad.—A piece of furniture equal in width to a broad quotation, or four ems piea.

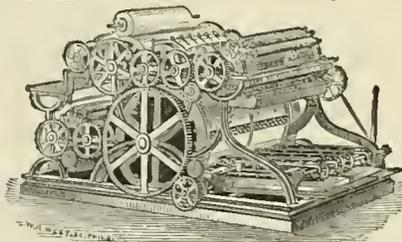
Broadside.—A forme of one page, printed on one side of a whole sheet of paper.—See POSTERS.

Broken Matter.—Pages of type disrupted, and somewhat intermingled.

Bulk.—A platform or table affixed to the end of a frame, to hold a board containing wet matter for distribution.

Bullet.—The dismissal of a person, whether from misconduct or from any other cause.

Bullock Press.—A new rotary self-feeding and perfecting press, widely differing in its principles of construction from all other machines, as the annexed illustration shows. It is fed from an endless roll of paper, prints both sides at the same time, and cuts up the sheets to the proper size, placing them on the delivery-board in a pile. It was invented by Mr. William Bullock, an American, and was first introduced into Europe in December, 1869.



Bundle.—A heap of paper consisting of two perfect reams, or 1000 sheets.

Burr.—The roughness on types which have been imperfectly dressed, and on brass rule cut with blunt shears.

C.

Cancel. From *cancellata*, a lattice. It signifies the drawing a pen several times obliquely across the page, in the manner of lattice-work. In Printing, matter is said to be cancelled which, after being duly composed, is not printed. Bookbinders call all sheets or leaves cancelled which are rejected and left out of the volume, on account of errors or imperfections.

Cancelled Figures.—See SCRATCHED FIGURES.

Candlestick. In former times, when compositors worked at night by the light of candles, they used a candlestick loaded at the base to keep it steady. It was invariably placed in the lower-case box. A few offices use them at the present day.

Canon.—A type one size larger than Trafalgar; the body is equal to four lines of Pica, and there are $18\frac{1}{2}$ ems to the foot.

Capitals. Letters distinguished in MSS. by having three lines drawn under them. For their use, See PUNCTUATION.

Cap Paper.—A thin description of paper used for wrapping light articles. Milliners' and other paper bags are made of it. Pressmen use the term as an abbreviation of Foolscap paper.

Card, or Cardboard. Several sheets of paper pasted together until they attain a required thickness. When dried and rolled they are cut to the various sizes mentioned in the following table, and made up into packs of fifty-two.

Large	3 in. × 1½ in.	Small	2½ in. × 3½ in.
Double Large	4½ in. × 6 in.	Double Small	3½ in. × 5 in.
Half Large	2½ in. × 3 in.	Reduced Small	2½ in. × 3½ in.
Third Large	1½ in. × 3 in.	Half Small	1½ in. × 2½ in.
Extra Large	2 in. × 3 in.	Town Size	2 in. × 2½ in.

Cards are now manufactured of a much better description than formerly. The fine absorbing qualities of good enamelled or polished cards enable a competent pressman to produce the most beautiful results,—in many cases scarcely discernible from copper-plate.

Card Backs. The backs of playing cards. The patterns of these are frequently very beautiful, and large sums are expended to secure fine designs. The printing, sometimes in seven colours, is executed with great care, and by experienced workmen who usually confine themselves to this branch of business. The front is worked at machine, but the backs are done at a hand press, from electro-plates, some of the pulls requiring the united efforts of two men. Sometimes, however, an unskilled labourer is employed to do this, and experienced workmen, often at a salary of more than 40s. per week, are engaged to make ready, roll, &c. Enough cards are printed on a sheet to make one pack, with the exception of two aces.

Card Cutting Machine. A machine, to which a large knife is attached, and by means of a lever is made to cut the cards indicated by the gauge, which must be set beforehand.

Card Printing.—A card to be well printed, requires nearly the same treatment, and as much care, as a wood-engraving. It should be worked without a blanket and with the finest ink. The manner of making ready is thus:—Get a light impression on the tympan-sheet, place the pins so as to bring the matter as near as possible in the centre of the card, one pin at the lower end and two at the side—of course, taking care that the pins do not come in contact with the type. The impression should be exceedingly light until properly regulated, and should not be more than is actually necessary to bring up the face of the type.

Card Printing Machine.—When large quantities of cards are ordered, they are now usually worked on a card machine, many varieties of which are manufactured. Some of these will be found described in this Dictionary in their alphabetical order.

Caret. A mark (Λ) used to denote that words or points are to be inserted.

Carriage. That part of the press which runs in under the platen and carries the forme.

Cartridge Paper.—A thick, hard paper, having the appearance of parchment. In first-class offices it is used for the purpose of sheeting rollers, and sometimes for bringing-up cuts.

Case.—A frame or set of boxes in which letter is kept to compose with. Cases are always spoken of as "pairs," viz., the Upper Case and Lower Case. Cases should always be lined with paper or they are likely to damage the face of types at the bottom of the boxes. The word Case is frequently used as synonymous with composition, as, To work at Case.

Case Rack.—A strong frame with ledges, in which to slide cases that are not in use, to keep them safely and without occupying any unnecessary room.

Cassie Paper.—Damaged paper—the outside quires of a ream.

Cast-off.—To examine MS. copy and determine how many pages it will make in any given size and type. This is done by composing five or six lines selected from some part which seems to be of the average style of writing, and thus ascertaining how many lines of MS. will make even lines of print. Suppose there are 600 pages of MS. averaging thirty lines in a page, and that it is required to know how many pages of foolscap folio it will occupy in print. There are altogether 18,000 lines of MS.; nine lines of MS. make five of print, therefore there will be 10,000 lines of print, which at fifty-three lines to a page will make 189 pages. Sometimes it is necessary to cast-off reprint copy, to determine what quantity will be got in, or driven out, by setting in larger or smaller type.

Cast-up.—To calculate the number of types in a sheet, and then value for work done at so much per 1000 letters. The following is the method of proceeding:—Measure the length of the page, including folio and bottom white-line, with em quadrats, and the breadth with en quadrats of the fount in which the matter is set; multiply them together, and the product will be the number of letters in a page. This, multiplied by the number of pages in a sheet will give the total number of letters contained in it, and the thousands multiplied by the price per 1000 will give the total value of the sheet or half-sheet to the compositor, who is paid for work done. In casting-up it is usual if the number of types over a thousand amount to less than 500 to strike them off; and if they amount to 500 or more to reckon them as a thousand.

Catch Line.—The small, insignificant lines in titles, cards, chapter-headings, &c., are technically termed Catch Lines; such as A, AND, THE, BY, FOR, ALSO, &c.

Catch Word.—The first word of the following page placed at the right-hand corner at the foot of the page. Catch-words are seldom used at the present day, except in law work or MSS. The signature, when required, is placed in the same line.

Cater-cornered (*obs.*)—A term applied to uneven paper, or paper whose sides are not at right angles with each other.

Caxton Machine.—A Single-Cylinder Gripper Machine invented by Mr. Myers, a practical printer and engineer of Southampton, in which the rollers are loose, and are inked from a table affixed to the carriage of the press. The ink table travels with the carriage, so that forme and table pass under the rollers alternately.

Cedilla.—A mark (ç) used in French to denote that the letter is to be pronounced soft. Some printers who do not possess these sorts, and do not care to purchase a few, use an inverted figure of 5, thus ç.

Chaff.—A word belonging to the slang dictionary, but too frequently heard in the printing office, when one compositor teases another as regards his work, habits, disposition, &c. It is frequently a source of unpleasantness and bad feeling among otherwise agreeable companions; but it is essentially a bad practice, to which no gentleman is ever addicted.

Chapels.—Meetings in the office for the consideration of trade matters, the settling of disputes respecting the prices of

work and any other business embraced by trade rules. Readers and overseers are necessarily excluded, except on "goose" occasions, when the "whole force of the establishment," apprentices, of course, excepted, receive "cards of invitation." Chapels have for their head a personage who from the day of his inauguration is known by the cognomen of "Father," and it is he who not only presides over the deliberations of chapels, but whose advice is taken on all difficult questions, even before a chapel is convened.—*Straker*. A very amusing account of the chapels of ancient times will be found in Hansard's *Typographia*, p. 302.

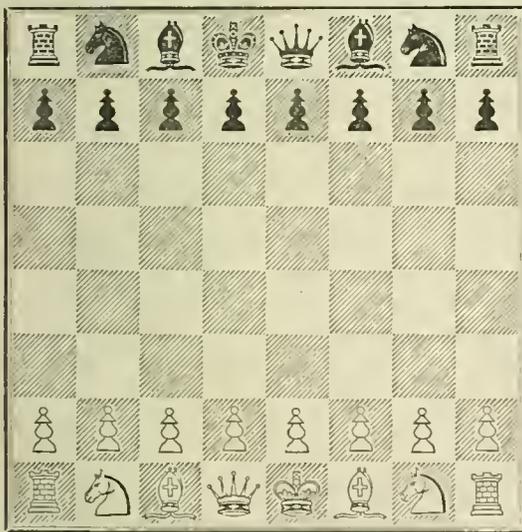
"Our art was hailed from kingdoms far abroad,
And cherished in the hallowed house of God;
From which we learn the homage it received,
And how our sires its heavenly birth believed;
Each Printer hence, howe'er unblest his walls,
E'en to this day his house a CHAPEL calls."

"*The Press*," by JOHN M'CREEERY.

Chase.—A rectangular frame in which pages are securely fastened, so as to convey the whole safely to and from the press or machine, and to keep the type fixed during the process of printing. A chase should bear equally on the imposing surface or stone and the press table; the cross-bars should be perfectly true so as to give good register, and the inside in all its parts must be quite straight and square. The cross-bars ought never to be used for any other purpose than that for which they were originally intended.

Cheques.—Ornamental designs used to separate the counter-foil from the cheque, and to cover the place of separation. Very complicated designs are sometimes adopted with the view of preventing imitation.

Chessmen.—These were formerly cut in wood, but now each character is cast as a separate type, for the use of newspapers and periodicals, to illustrate games of chess. The following is a complete assortment, consisting of sixty-four pieces:—



Choked.—Type filled up with dirt, or the sediment of ink, so that it does not work clear, is said to be choked. This term is also used when too much ink has been spread on the forme.

Chromo-Lithography.—See LITHOGRAPHY.

Chromo-Typography.—The art of printing in various colours from electrotype plates, &c. It has commercially developed itself during the last fifteen years, until it has become a distinct adjunct to what is familiarly known as letter-press printing. The higher branches of chromo-typography used to be practised by only one or two houses; but now the demand for coloured posters and show-cards is so great that numerous printers have been induced to add this branch to their trade with great success and pecuniary gain. The best class of chromo

work is accomplished by the studied blending of delicate tints to produce a whole, which an artist alone can give; he it is who must conceive and furnish the engraver with sketches of the tints for each block, leaving it to the pressman to furnish the colours of the transparency, opacity, or tone required. The most perfect register must be obtained; for if only one requisite be unfulfilled, ten or twelve printings are rendered valueless. The Christmas supplements to the *Illustrated London News* come under this category, but are deficient, not in artistic merit, but in the slopping manner in which the colours are manipulated; indeed, the design is often marred by the presswork.

Cicero.—The French and German name for Pica. It derived this name from the circumstance of the Epistles of this writer having been first printed in letter of that size. It is doubtful whether the name was first given by the French or the Germans.

Circumflex.—The accent marked thus, *â*.—See ACCENTS.

Circular Quadrats and Curvilinear Furniture.—These are cast in various sizes, to enable the compositor to make curved lines of various kinds. The inner furniture has a convex surface, and the outer a concave surface. The type is placed between, and the angles outside may be filled up with type.



Complete circles can be made by the quadrats, but our limited space will only permit of us giving the accompanying designs. They are cast to the height of leads: our illustration, however, is made type high to show the form of the furniture.

Clarendon.—A useful jobbing letter, which was brought out, in conjunction with the Antique, to supersede the old Egyptian and Albion faces. The following is a specimen:—

THE AMERICAN PRINTER.

Clean Proof.—A proof with but few faults in it; or, a proof pulled carefully after correction to send to the author.

Clearing Away.—Taking out leads, white lines, and smaller type from the body of a work after printing, so that the type may be papered and put away. The type should be washed, the chase and furniture put away, the pages litted on galleys, and after the heads, whites, and all irregular matter are extracted and distributed, and leads, brass rule, &c., placed in their proper receptacles, the solid matter is tied up in convenient portions, put on a letter-board until nearly dry, when it is papered up and marked with its proper name and description.

Clearing Pie.—Separating various sizes or kinds of type from a confused mass, and placing each letter in its proper box and case. Not only does every distinct size require to be separated, but different founts of the same size.

Clearing the Stone.—It is a rule in all offices that, after imposing or correcting, the mallet, shooting stick, furniture, quoins, saw, saw-block, and shears are to be returned to their respective places; type distributed, and bad letter put into the shoe, so that no impediment shall be offered to the next person using the stone. Any of the articles, or two letters left on the stone, will render the party offending liable to a fine in many well-regulated offices.

Clerical Errors.—Errors made in the copy by the editor or transcriber.

Clicker.—The compositor who in a companionship receives the copy and gives it out to compose, and attends to the correct making-up and imposition.

Clicking.—This is a term applied to the mode pursued in London of getting out work by the formation of a companion-

ship, or selected number of men, who are appointed to go on with a certain work or works.

Close Matter. Pages with but few breaks or whites, or without leads between the lines.

Close Spacing. Putting very little space between words.

Close up.—When an article is divided into short "takes," and the second "take" is emptied on the galley before the first is finished, the compositor setting the first "take" has to "close up" the "opening," by pushing the subsequent matter up to his own; and so on, wherever an "opening" occurs. If, however, the first "take" is finished before the second is emptied, the second compositor is told to empty "close up."

Clumps. Metal clumps are used in place of white-lines at the bottom of newspaper columns, to protect the letters from slipping in locking-up, when the foot-stick is short. They are cast similarly to leads, only of a thicker body, such as Nonpareil, Pica, &c. —For STEREOTYPE CLUMPS, see STEREOTYPING.

Cogger's Press.—A powerful press, well adapted to fine work, but little used now from its liability to get out of repair.

Collate.—To examine the signatures in each gathering of a book, to see that they are consecutive.

Colon (:).—The colon is employed in a sentence to separate parts requiring a pause somewhat less than would be given to a distinct sentence. —See PUNCTUATION.

Colombian Press. A press invented by Mr. Geo. Clymer, of Philadelphia. The first press of this kind constructed in London was put up in 1818 and afterwards sent to Russia. It is an iron press, without a screw. The head is a powerful lever, acted on by other levers, to which the bar is attached, and produces the pressure. The platen is attached to the head by a strong iron bar, and the descent is made steady and regular by two iron girders which project from the cheeks. The power of this press is very great, and its construction is extremely simple.

Columns. In newspapers, &c., are the subdivisions of a page separated by column rules.

Column Galley. A long narrow galley, with brass or zinc bottom, used principally for newspaper work.

Column Rule.—The rule which divides two columns of matter. Column rules are made to various thicknesses and bevelled on each side, to obviate the use of leads.

Combination Borders. Borders composed of several distinct pieces of type, most of which form separate borders of themselves; but when any or all of them are combined, some very tasteful and ingenious designs are effected thereby.

Combination Leads, Clumps, and Metal Furniture.—The following table shows the combinations that can be formed by leads or clumps of six lengths only, not more than three pieces being required at the same time. Indeed, only *two* pieces are used in eighteen of the thirty-eight examples given.

LENGTH IN EMS OF THE PIECES EMPLOYED:—

		4 7 9 13 15 20.				
4, 4	..... = 8	13, 13	..... = 26	15, 15, 9	..... = 39
7, 4	..... = 11	20, 7	..... = 27	20, 20	..... = 40
4, 4, 4	..... = 12	15, 13	..... = 28	15, 13, 13	..... = 41
7, 7	..... = 14	20, 9	..... = 29	20, 15, 7	..... = 42
9, 7	..... = 16	15, 15	..... = 30	15, 15, 13	..... = 43
13, 4	..... = 17	20, 7, 4	..... = 31	20, 20, 4	..... = 44
9, 9	..... = 18	15, 13, 4	..... = 32	15, 15, 15	..... = 45
15, 4	..... = 19	20, 13	..... = 33	20, 13, 13	..... = 46
7, 7, 7	..... = 21	15, 15, 4	..... = 34	20, 20, 7	..... = 47
15, 7	..... = 22	20, 15	..... = 35	20, 15, 13	..... = 48
15, 4, 4	..... = 23	20, 9, 7	..... = 36	20, 20, 9	..... = 49
20, 4	..... = 24	15, 15, 7	..... = 37	20, 15, 15	..... = 50
9, 9, 7	..... = 25	20, 9, 9	..... = 38		

The printer has also at his command the six single pieces used, viz.: 4, 7, 9, 13, 15, and 20 ems. By using four, five, or six pieces together, the above combinations may be extended consecutively to one hundred ems.

Comma (,). The point which marks the smallest grammatical division, and in reading represents the shortest pause. Two inverted commas are used to denote extracts or quotations from other works, dialogue matter, &c. They are placed at the commencement of the passage quoted, a thin space dividing them from the first letter; the end of the extract is denoted by two apostrophes. A single inverted comma is used as an abbreviation of the word *Mae*, as in *M'Arthur*. Inverted commas were first used by Guillemet, a Frenchman, to supersede the use of *Italic* letter. As an acknowledgment, his countrymen call them after his name.

Comp.—An abbreviation of Companion, also of Compositor. Members of companionships are in the habit of addressing each other as Comps.

Commercial Signs.—The following are those mostly used at the present day:—

@	At or to.	£	<i>Libra, librae</i> , pound or pounds sterling.
℥	<i>Per</i> , each.	/	<i>Solidus, solidi</i> , shilling or shillings.
lb	Pound in weight.		
\$	Dollar or dollars.		

Companionships.—For many years past, a system has been adopted in the Composing Departments of large Book Printing offices—particularly in London—of giving out the work to Companionships. The great advantage attending this plan is, that while all the pages are made up in an uniform style by the clicker which was seldom the case when each man made up his own matter—works of considerable extent are printed with greater despatch, and at the same time it is found to produce a saving in the cost of production. This benefit is equally shared by journeymen and employers; for while the former are enabled to earn more wages, the latter, by the great facility in the execution of the work, can undertake larger orders, and thus obtain greater profits. The clicker, on receiving copy from the overseer, calls the members of his companionship together for a few moments, and informs them what cases to put up and what letter to distribute; at the same time, he gives them any general directions which he may deem expedient for their guidance in composing. While his companions are "putting in their letter," the clicker proceeds to get together what leads and other matter he may require for the making up. He then draws out a table in a simple form. In the first column he sets down the name of each compositor as he takes copy; and in the second, the folio of the copy, so that he may be able to ascertain instantly in whose hands it lies. In the third column, he notes down the number of lines each man has composed, opposite to his name, as fast as the galleys are brought to him. In the fifth, he sets down such remarks respecting the copy as may be necessary; also any circumstance that occurs in the companionship. When the companionship are ready for their first taking of copy, the clicker invariably doles it out in small quantities, giving the first two or three compositors rather less than those that follow. This plan is adopted to prevent any delay in the "making-up." During the time the first taking of copy is in hand the clicker sets the first-page heading, the folios and white-lines, signatures, notes, poetry, and any other extraneous matter. As soon as he discovers that the first two or three takings are completed (which he is soon informed of by a second application for copy), he proceeds to the making-up of the first sheet. As he takes each man's galley he counts the lines and enters the number against the compositors' name in the before-mentioned table, which serves as a check against the man's bill when he presents it at the end of the week. Having thus made up the first sheet, he lays down the pages on the stone, and immediately informs the "Quoin-drawer Overseer" (*q.r.*) of it, who provides cases and furniture. The clicker then takes the cords off the pages, and locks up the forme ready for the proof-puller. The companions are thus kept busily engaged at their cases, while the clicker goes regularly about the little odd jobs which so frequently take the compositors' attention off their work under the old system of each making-up and imposing his own pages. The start being made, it only requires a plentiful supply of letter, leads, &c., and the work will proceed rapidly. If the clicker finds that from any cause,—such as abundance of notes, poetry,

or other peculiarities in the work,—that he cannot make up and impose the matter as fast as it is composed, he generally calls to his aid one of the companions who, in his opinion, is best capable of assisting him. Should he not have finished his taking, either the person next to him takes it and sets up to himself; or, if there is a great deal to set, the man who took copy last finishes it for him. When this is the case, the clicker sets down the number of lines he has composed, and takes notice of the number of hours he is engaged "on time," which he enters in the form referred to. As soon as the proofs are read, they are forwarded to the clicker, who immediately requests the person whose name appears at the beginning to lay up the sheet and correct his matter. The proof is then passed on regularly from one to the other until all have corrected, the last one locking-up the forme and carrying it to the proof-press. This is the only instance in which the companions are called from their frames, and proves at once that a great saving of time to the compositor is effected thereby. When the last taking of copy is given out, it is the duty of the clicker to apply to the overseer for other work, so that the companions shall not be kept standing. Frequently, however, one companionship will have three or four works going on at the same time; so that, if there is a scanty supply of copy or letter of one work, the clicker uses his judgment by employing his companions on the others. But should it so happen that all the work is nearly finished, and there is no more copy to give out, then, as soon as one of the companionship is out of copy, the lines of the whole are counted off, and set down in the table, and every one does what he can for the general benefit, till all is completed. At the end of the week, the clicker makes out the bill in the following manner:—He first ascertains what amount of work has been done during the week; he then counts how many lines each companion has set, and divides them into hours. Having done this, he refers to his table to see how many hours of time-work has been charged, including his own time, which is generally about sixty or sixty-three hours per week, without overtime. He then adds the number of hours of composition, time-work, and his own together, which gives him the total number of hours to be paid for out of the bill. By reducing the sum total of the bill into pence and dividing it by the number of hours, he gets at the price per hour at which the bill pays; so that it is to his interest to work well, in order to make the bill pay as much as possible. The "fat," such as the title, blanks, short pages, folios, whites, and head-lines, are all made up by the clicker, and thrown into the general bill, so that each man gets his fair proportion of it when the bill is made out; whereas, by the old system, a considerable space of time was literally wasted by the compositors, at the end of every work, gathering round the stone, "throwing quads" (*q.v.*) to decide who should have the title, who the blank, or any other fat matter, such as a piece of table-work, &c., often ending in disputes and angry feeling. Therefore he who picks up the largest number of stamps, in the cleanest manner, comes in for the largest share of the "fat." This is how it should be. But by the old system, one man may have a happier knack than another of throwing the quads, and would get the largest share of fat, when, perhaps, he has actually done the least portion of the work. Most companionships work on the same principle, although they have a different mode of paying the clicker. In some he is only paid for the time he is actually engaged at the work; another companionship will equally, not proportionately, divide all the fat; while others will allow the clicker to charge the same number of hours as the man who has composed the largest number of lines. The latter plan is bad on principle, as it affords ground for dishonesty; for it is very easy for a clicker to give the best and fattest copy to the compositor who can pick up the largest number of stamps. One of the largest London firms divides their work between three different classes of companionships, and pays their clickers establishment wages. The first-class companionships have all the best kind of work, and the companions are paid 7d. or 8d. per hour (or 1000 letters); the second-class companionship take the medium work, and are paid 6d. per hour; while the third and lowest class have to be content with the inferior work, for which they get 5d. per hour. Each of these companionships receives the above prices irrespective of

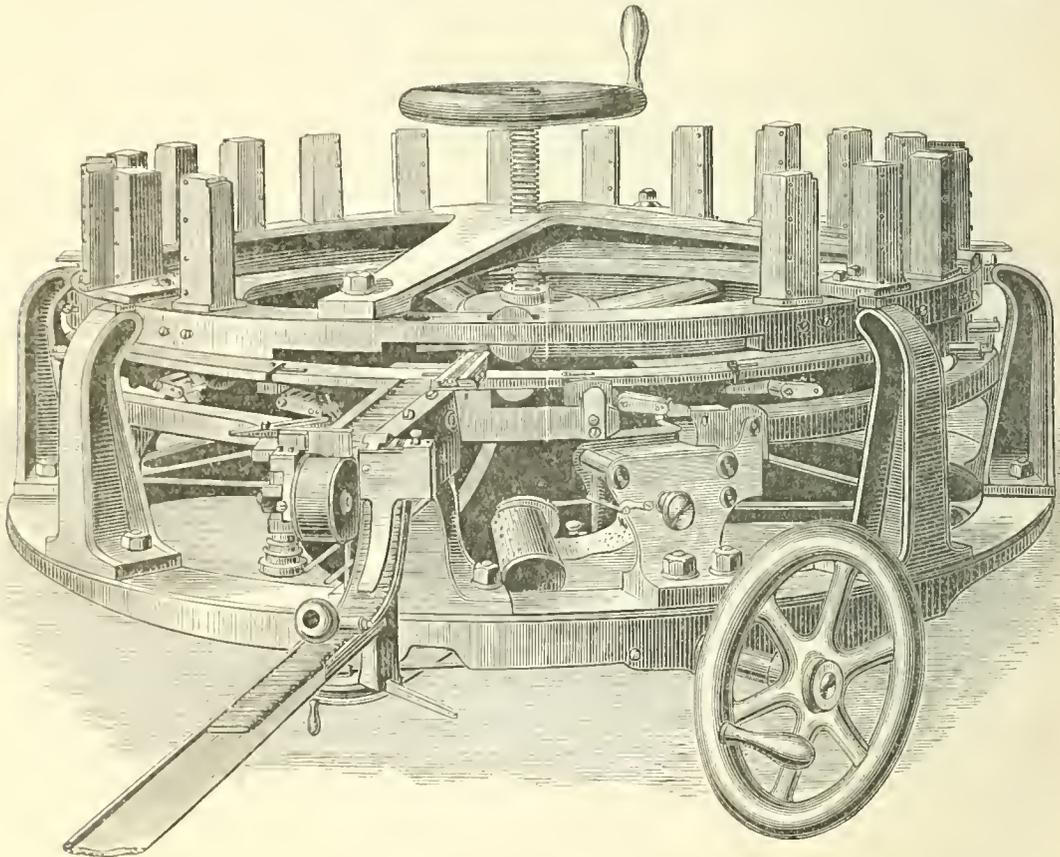
cuts, blanks, tables, or other "fat," which is claimed by the employers, as remuneration for the clicker's labour. On being first employed, the overseer generally places the compositor in the third-class companionship. His manner of working is closely watched, and if he proves to be a quick and clean compositor, on the first opportunity he is drafted into the second-class; and if his abilities are still approved of and his conduct is good, he may ultimately be promoted to the first-class companionship. Here he will have a double advantage over his previous situation for not only will he be engaged on the best work, but he will be kept constantly employed; for if a slackness occurs, the inferior work is taken from the third-class "ship" and given to the second; while the best "ship" is kept going with work from the others, rather than be suffered to stand still. Perhaps, however, the fairest and most equitable method is to let the companions choose their own clicker, and pay him out of the general bill. If he does not work to their satisfaction, they will soon replace him by a more competent man; thus the employer will have the satisfaction of knowing that his work is progressing with all the dispatch possible, and that he is only paying the actual worth of the labour performed.

Composing.—A term which includes several exercises as well of the mind as of the body; for when we are said to compose we are at the same time engaged in reading and spelling what we are composing, as well as in taking care to space and justify the matter. When the copy of a work is put into the hands of the compositor he should receive directions respecting the style of the work. He then makes his measure to the exact number of Pica ems directed, which is done by laying them flat-ways in the composing-stick, and then screwing it up, not too tight, as that would be apt to strain it, nor so slack as to allow the measure to give. He then fits a setting-rule to the measure, and his case being supplied with letter, he is prepared for composing. Having taken notice of the state of the copy, he begins his work. His chief endeavour should be to compose with ease, accuracy, and expedition. An ill habit, once acquired, is with difficulty shaken off. The variety of motions exhibited by some compositors are truly ludicrous; such as nodding the head, agitating the body, throwing out the arm, ticking the letter against the case or the setting-rule, with many other false movements, which not only waste time, but fatigue the mind and exhaust the body. The swift action of the hand is not the criterion of a quick compositor. Having placed himself opposite the centre of the lower case, the compositor takes the stick in his left hand, his thumb being over the slide, resting on the setting-rule; with the thumb and first finger of his right hand he takes up the letters, spaces, quadrats, &c., one by one, and places each upon the setting-rule, supporting and placing them together by the action of the left thumb, the other hand being constantly disengaged for picking up the next letter. The whole of these movements are performed with a degree of celerity not easily conceivable by a stranger to the art. Upon arriving near the end of his measure he observes whether the line will end with a complete word, or an entire syllable, including the hyphen, and if his last word or syllable happens exactly to fill the measure, or makes the line completely tight, he has nothing more to do to that line; but if, which is far more likely to be the case, he finds the measure not entirely filled by perfect words or syllables, he increases the distances between the words in that line by equally adding more space between each until the measure is moderately tightened. This operation is called "justifying," and if done properly is one that displays much nicety and skill, every line requiring to be of an equal degree of tightness, neither too tightly wedged into the composing stick, nor yet at all loose and uneven; neither the words placed too close together in one line, nor too wide apart in others. This is one great criterion of a good workman. The compositor may as often have to lessen the spaces first used in a line as to add to them, particularly in narrow measures of large type, containing of course fewer words in a line, and it frequently happens that a long monosyllabic word or syllable will not, as the line is first spaced, go in at the end, and to drive out which the line would appear with great gaps; he must therefore change his spaces for thinner, some of which, from their being very thin are called hair-spaces. The line having been completed, the rule

is drawn out and placed over or upon that line, and the compositor proceeds with the next, and so on with the succeeding lines, until his composing-stick is filled, which takes perhaps ten or twelve lines of middling-sized type. He then places the rule in front of the last line, and fixing his forefingers of each hand in front of the rule, he presses the middle fingers up against the sides of the lines, and his thumbs behind the first lines, raising the whole out of the composing-stick at once. He thus conveys the stickful to the galley, disengaging the thumbs as he places the lines against the head of the galley, or against the lines that have been previously emptied and placed thereon.—*Hansard.*

Composing Machines. Machines for setting types, without manual labour. Many ingenious inventions for this purpose have been produced in Great Britain, France, and in the United States. Almost all of them, however, have been pronounced by

pickpockets, each carrying seven of what are called the "legs-of-man," and seven fingers. At the place where the machine may be said to commence operations, there is a drum, about 2 in. in diameter, with 14 perforations across its upper surface, and over this drum the paper, previously perforated, is made to travel by a positive motion of 1-10th of an inch every movement. Over the top of the drum and paper there are 14 levers with pegs, and which are always seeking to enter the perforations in the drum, but are only able to enter those which have corresponding perforations in the paper. One half of the perforations regulate the legs-of-man, and the other the fingers. Two perforations are always made in the paper for the former, and from one to seven for the latter, so that a pickpocket is capable of taking type the same instant out of all the seven divisions of any pocket. On the type being extracted it remains upon the travelling ring till



MACKIE'S COMPOSING MACHINE.

practical men to be too complicated and expensive for general use. The latest is Mr. Mackie's, of the *Warrington Guardian*, of which we give an engraving below. Mr. Mackie has been engaged on this machine several years, but in 1869 he announced that he had actually completed it. It is divided into two parts. One of these is a tiny instrument consisting of fourteen keys, by means of which narrow strips of paper are perforated by girls either in the printing office or elsewhere. The Composing Machine proper consists, practically, of three horizontal rings about 3 ft. in diameter and 2 in. broad, the under one and the top one being at rest. On the top ring 20 pockets are inserted, each of which contains compartments for seven different kinds of type, and sufficiently open at the bottom to allow the proper apparatus to extract the bottom type from any one, or from all the seven divisions, as wanted. The middle or travelling ring has twenty

it has reached the delivery channel, when a pusher places it on a travelling belt, a few inches long, from which it is pushed down a syphon spout, one letter upon another, ready for being justified in lines. A ring carrying 20 pickpockets, each of which has seven fingers, may extract 20 times seven types in one revolution. The composing power of this machine is guaranteed at 12,000 an hour. The perforating can be done at the rate of 10,000 per hour, and the paper used many times. A proof is printed as the type is being set. The machine is in daily use at the *Warrington Guardian* office, driven by steam, but it may be driven by hand, as shown in the engraving.—The only machine which has been practically tested in England for any considerable length of time is one invented by Mr. Robert Hattersley, of Manchester, an illustration of which will be found on the following page. The great merits of this machine are, that it sets up the type very

expeditiously, is easily manipulated, occupies little room, and is moderate in price. It stands on a space of 2 feet by 3, and is worked by touching a keyboard, like that of a piano. Any intelligent operator, after a few weeks' practice, ought to be able



to compose at the rate of from 4000 to 6000 types in an hour, which is equal to more than the work done by three ordinary compositors. The type used is of the ordinary kind. To the speed of the machine there is no limit whatever. All depends on the dexterity of the operator. The price ranges from £75, at which sum an efficient instrument can be supplied. The *Printers' Register*, of September, 1869, says:—

“The Composing Machine is now an accomplished fact. Its precise construction is at present not definitely settled, but as certainly as the next dozen years will come and pass away is it that a Composing Machine will be used in every large printing office. We cannot foresee the effect

of this invention, but we may say that it cannot fail to exert a very important influence upon the question of the employment of women as compositors. The machine is specially suitable for female use.”

We have taken some pains to ascertain the real merits of this machine, and we can conscientiously endorse the claims of the inventor, who is a practical mechanic, and has utilised his engineering attainments in the avoidance of many technical defects which have marred nearly all the Composing Machines that have hitherto been introduced. Simplicity is its leading characteristic, and it is a merit of the highest importance. The type is worked into the composing stick direct, and by only one motion—the advantages of which are obvious. No steam-power is required; the mere pressure of the finger on the keys corresponding to the various letters is all the motive power necessary. The matter is set face upwards, is at all times under the immediate supervision of the operator, and the lines can be as readily manipulated as in the ordinary stick. The composing power is limited only by the degree of dexterity attained by the operator, and the keys have been worked at the rate of 26,000 letters per hour. There are many other distinguishing features about Mr. Hattersley's machine which entitle it to general adoption.

Composing Rule.—See **SETTING RULE.**

Composing Stick.—An instrument in which letters are set, or arranged in lines. They are made of various designs, and the



illustrations annexed represent two of the most modern. Composing Sticks of the old-fashioned makes



consist of the following parts: The plate, which forms the bed of the instrument; the flanch, turned up from the plate at right angles, and $\frac{3}{4}$ ths of an inch high above the plate, through which are bored holes, about one inch apart from each other, to receive the screw; the head, which is of the same height as the flanch, but much stronger, securely fastened to it and the plate by rivets, dovetail, or brazing; the slide, having an opening in the lower leg, or part which rests against the flanch, to admit the tenon of the nut, which is shouldered to fit into this groove, and which nut is to receive the screw on its being passed

through one of the holes, to fasten the slide to any measure that may be required. This is done by means of the groove in the slide being moved backward or forward on the screw and nut, and by the screw being used at the hole convenient to the distance required, so as to set the slide at the point wanted from the head. The descriptions of Composing Sticks figured in our woodcuts are made to obviate the necessity of perforating the flanch; the slide being fixed to the desired distance from the head, in the one case by a screw, and in the other by a lever, so arranged as to grasp tightly the slide and the flanch. The chief advantage of this arrangement is, that an alteration of measure can be made with the utmost facility. Composing Sticks are made of iron, brass, or gun-metal; the latter, owing to their not being liable to corrosion, are the most suited for warm climates. They are made of various lengths, from about four inches up to ten or twelve; above that size, for broadsides, they are chiefly made of mahogany. Sometimes the slide is split, and when the two parts are put asunder, they can be adjusted to a short measure, so that the compositor can have his work proceeding in two different measures at one time, without altering his stick. The depth of English sticks is about two inches, but in France they are much shallower, frequently holding no more than six lines. The most usual defects in Composing Sticks are, the slides and heads not being perfectly square to each other, and each of them to the plate; also, the slides and heads are sometimes not square, or at right angles to the flanch.

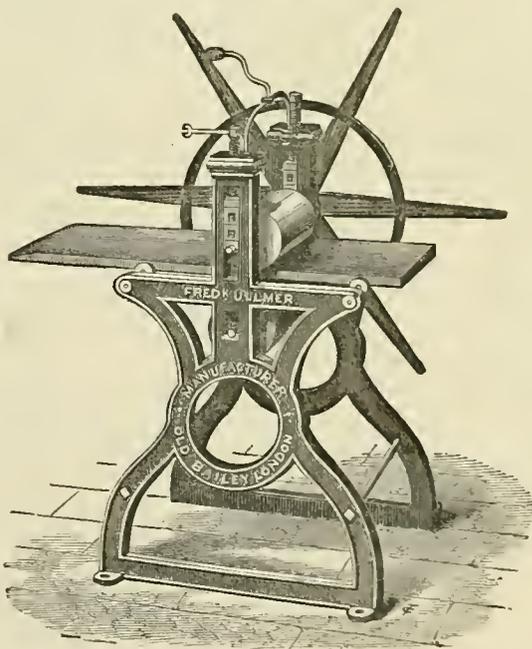
Composition.—See **ROLLERS.**

Compositor.—The workman who composes type.

Compositors' Prices.—See **SCALE OF PRICES.**

Cope's Press.—See **PRESSES.**

Copperplate Press.—Many improvements have been introduced into this machine during the last few years. We are indebted to Mr. F. Ullmer, a large manufacturer, for the annexed illustration of one of the most modern forms.



The Copperplate Press is employed in taking off prints or impressions from copper or steel plates, engraven, etched, or scraped, as in mezzotint. It is a description of rolling press, and consists of two rollers or cylinders supported on a strong frame. These rollers are moveable on their axes, one being placed just above the other. The table on which the plate to be printed is laid

runs between the two. The upper cylinder is turned round by means of a cross fixed on its axis; the lower one is turned by the action of the upper on its surface. These rollers are so arranged as to admit of a greater or less amount of pressure.

Copperplate Printing.—See PRINTING.

Copy.—Matter to be printed, whether a book, pamphlet, circular, card, or any small or large job. It is of two kinds—manuscript and reprint.

Copyright.—The copyright of a work, engraving, or piece of music, is secured for forty-two years, and passes from the author or proprietor to his children, by payment of Five Shillings into Stationers' Hall for registration, and an equal sum for a Certificate, and the presentation of a copy to the Stationers' Company, and of four others to the British Museum and the Universities. See REGISTRATION, &c.

Correct.—For Correcting in metal, see CORRECTING. — For Correcting proofs, see PROOF-READING.

Correcting.—As soon as the proof has been read and given out, the compositor should lay up his forme (unless his matter is on a galley), and unlock it all round, being careful not to leave the quoins too loose, or the matter may be squabbled, or types fall out at the ends of the lines. He should then set up the types required for the corrections in his stick, with a few spaces on a piece of paper, or, what is more handy, in a small tray with partitions in it, similar to the plan annexed. Taking his bodkin in his right hand, the corrector should place the point of it against the end of the line he wishes to correct, and with the middle finger of his left hand against the other end of the line, raise it altogether, high enough to give him a clear view of the spacing. He can then change the faulty letter, and make the necessary alterations in the spacing, before dropping the line. By this method the type will not be injured, as it so often is when the bodkin is forced into the sides or heads, and regularity in the spacing may be secured, as well as much time saved. In tables, or in any matter in which rules prevent the type being raised as directed, the letters must be drawn out by the bodkin, and great care will be necessary to avoid injuring the types. The point should be stuck into the neck of the letter, between the beard and the face, drawing it just high enough above the other letters to allow of taking hold of it with the forefinger and thumb of the left hand. In this operation as small an angle as possible should be made with the blade of the bodkin, in order that it may not touch any of the surrounding types, as a trifling graze will injure the faces of the letters near it.

Hair.	Thin.	Thick.
Em.	En.	Quads.

Correctors of the Press.—See READERS.

Coventry.—When a workman does not conform to the rules of the Chapel, he is sent to Coventry; that is, no person is allowed to speak to him, on any consideration, apart from business matters, until he pays a due regard to the rules.

Cramped.—Work is said to be cramped when whites are used sparingly, short pages avoided, and the matter squeezed more closely than usual, to get a certain quantity of matter into a given number of pages. A compositor cramps his matter when he does not insert whites in proportion to the open character of his work.

Cross.—The long and short crosses of a chase are bars of iron, crossing each other at right angles, and dovetailed into the rim, dividing it into four parts. The short cross is the broadest, and has a groove cut for the points to fall in.

Crotchets.—Otherwise brackets [], are used to enclose a word or sentence intended to supply some deficiency, or to rectify some mistake.

Cut-in Notes.—Side notes, inserted in the text, the lines of which are shortened to receive them.

Cuts.—See WOOD ENGRAVINGS.

Cut the Line.—A term used among compositors, to signify leaving-off work. Generally, when several compositors are en-

gaged upon a work, and one of them is out of copy or letter, the whole of them are expected to "cut the line"—i.e., leave off work when he has finished the line he is then composing,—and all stand idle till a fresh supply arrives. It is a silly practice, and we are glad to hear that compositors in many houses have abandoned the system. Because one compositor is out of copy or letter, it is no reason why he should demand that all the others should leave their work, especially as it often happens it is near the end of a volume.

Cutting the Frisket.—Cutting off those parts of the paper which would prevent the forme being completely printed.

Cylindrical Printing.—See PRINTING.

D.

Dagger.—When used as a reference mark, the Dagger (†) stands next in order after the star. See OBELISK.

Dances.—See FORME DANCES.

Dash.—A mark (—) signifying, in general, that a sentence is broken off abruptly. For its use, see PUNCTUATION.

Dead Horse.—When a compositor or pressman has drawn more money on account than he has actually earned, he is said to be "horsing it," and until he has done enough work in the next week to cover the amount overdrawn, he is understood to be working a "dead horse."

Dedication.—The Dedication, which generally follows the title, is properly set in capitals and small capitals, displayed in long and short lines. The name of the person to whom the work is dedicated should always be in capitals, and the name of the author also in capitals, but of a smaller size.

Degener's Press.—In the primitive days of typography, the time-honoured but unwieldy hand press was the only appliance demanded by the jobbing printer. But the necessity has sprung up within the last generation of a machine more compact in form and convenient in operation, and one providing, at the same time, for a very material increase of speed. The extension of advertising by means of cards and circulars, called for presses specially adapted for the rapid production of that class of work. Stimulated by this demand, various engineers have invented different jobbing machines, one of which is here illustrated. It is



the invention of an American, Frederick Otto Degener, who introduced it in 1860, under the name of "The Liberty." In this press are combined the important necessities of simplicity and strength, with the ability to print, at the utmost speed, work of the finest quality, with freedom from all danger to the operator. The type is fastened, in a chase, on to the table, which is vertical, and the paper to be printed is placed beneath a platen, similarly inclined. On the two meeting, the impression is produced. The speed is, according to the ability of the operator, from 1000 to 2,500 impressions per hour.

Dele.—The second person, singular, imperative mood, of the Latin verb *deleo*, to blot out, to expunge. See **PROOF-READING**.

Demy.—The name of a size of paper, $22\frac{1}{2}$ in. \times $17\frac{3}{4}$ in. See **DIMENSIONS OF PAPER**.

Descending Letters.—The letters so called are—*g, j, p, q, y*, of the lower-case. In Italic founts, however, the letter *f* is both ascending and descending.

Devil.—Otherwise, "Printers' Devil," is a term applied to the boy who does the drudgery work of a printing-office. In former years it was commonly used; of late it has become almost obsolete in London, owing to the number of boys employed. On newspapers, the boy who waits on the editor for copy is generally termed "the Devil." It is more frequently employed by provincial printers. There is an old tradition concerning the relations supposed to exist between one of the first printers and his Satanic majesty. When the Bibles of Faust appeared before the world, they were designed to imitate those which were commonly sold as MSS. Faust attempted the sale of his books at Paris, and he considered it to be his interest to conceal the art of printing with moveable types. He was enabled to sell his books at sixty crowns each, while the scribes demanded five hundred for theirs. This circumstance excited universal astonishment, and still more when he produced copies as fast as they were wanted, and even lowered his price. The uniformity of the copies increased the popular wonder still further. Informations were given to the authorities against him, as a magician; and, on searching his lodgings, a great number of copies were found. The red ink—and Faust's red ink is peculiarly brilliant—which embellished his copies was said to be his blood; and it was solemnly adjudged that he was in league with the devil. Faust was at length obliged, to save himself from a bonfire, to reveal his art to the authorities, who then discharged him from all prosecution in consideration of this useful invention. Such is the tradition, but authorities on the early history of typography differ as to its authenticity.

Diamond.—The name of a type a size smaller than Pearl. The number of ems to the foot are as follows, according to the founders named:—

Caslon, 204; Figgins, 205; Reed & Fox, 210; Patent Type Founding Company, 203 $\frac{1}{2}$.

A size known as PEARL-DIAMOND is also cast, the proportions of which to the foot are:—

Caslon, 191; Figgins, 192; Reed & Fox, 197; Patent Type Founding Company, 191.

Diamond Printing Machine.—See **DUNCAN'S MACHINE**.

Diæresis.—The diæresis (See **ACCENTS**) placed over a vowel denotes in general that that vowel forms a syllable, and does not constitute part of one with another vowel preceding or following it. Thus, *ærial* is pronounced *a-æ-rial*. So *preëminent*, and similar words, where the two vowels are part of two different syllables, are sometimes distinguished by the diæresis; but the usual plan is to insert a hyphen between the two vowels, as in *co-operate*.

Dimensions of Paper.—The following table gives the dimensions in inches of the various sizes of paper, and the different divisions into which the respective sheets may be cut:—

Double Super Royal.		Double Large Post.	
Broadside ...	40 \times $27\frac{1}{2}$	Broadside ...	33 \times 21
Long Folio ...	40 \times $13\frac{3}{4}$	Long Folio ...	33 \times $10\frac{1}{2}$
Long Thirds ...	40 \times $9\frac{3}{8}$	Long Thirds ...	33 \times 7
Double Royal.		Double Crown.	
Broadside ...	40 \times 25	Broadside ...	30 \times 20
Long Folio ...	40 \times $12\frac{1}{2}$	Long Folio ...	30 \times 10
Long Thirds ...	40 \times $8\frac{1}{8}$	Long Thirds ...	30 \times $6\frac{3}{8}$
Double Demy.		Double Post.	
Broadside ...	$35\frac{1}{2}$ \times $22\frac{1}{2}$	Broadside ...	31 \times 19
Long Folio ...	$35\frac{1}{2}$ \times $11\frac{1}{4}$	Long Folio ...	31 \times $9\frac{1}{2}$
Long Thirds ...	$35\frac{1}{2}$ \times $7\frac{1}{2}$	Long Thirds ...	31 \times $6\frac{1}{8}$

Dimensions of Paper, continued—

Double Foolscap.		Demy, continued—	
Broadside ...	27 \times 17	Broad Thirds ...	$17\frac{3}{4}$ \times $7\frac{1}{2}$
Long Folio ...	27 \times $8\frac{1}{2}$	Broad Quarto ...	$17\frac{3}{4}$ \times $5\frac{1}{8}$
Long Thirds ...	27 \times $5\frac{3}{8}$	Quarto (Common) ...	$11\frac{1}{4}$ \times $8\frac{1}{2}$
Double Post.		Octavo (Common) ...	$8\frac{1}{4}$ \times $5\frac{1}{8}$
Broadside ...	25 \times $15\frac{1}{2}$	Large Post.	
Long Folio ...	25 \times $7\frac{1}{2}$	Broadside ...	21 \times $16\frac{1}{2}$
Long Thirds ...	25 \times $5\frac{1}{8}$	Long Folio ...	21 \times $8\frac{1}{4}$
Imperial.		Long Thirds ...	21 \times $5\frac{1}{2}$
Broadside ...	30 \times $22\frac{1}{2}$	Broad Folio ...	$16\frac{1}{2}$ \times $10\frac{1}{2}$
Long Folio ...	30 \times $11\frac{1}{4}$	Broad Thirds ...	$16\frac{1}{2}$ \times 7
Long Thirds ...	30 \times $7\frac{1}{2}$	Broad Quarto ...	$16\frac{1}{2}$ \times $5\frac{1}{4}$
Broad Folio ...	$22\frac{1}{2}$ \times $15\frac{1}{2}$	Quarto (Common) ...	$10\frac{1}{2}$ \times $8\frac{1}{4}$
Broad Thirds ...	$22\frac{1}{2}$ \times 10	Octavo (Common) ...	$8\frac{1}{4}$ \times $5\frac{1}{4}$
Quarto ...	$22\frac{1}{2}$ \times $7\frac{1}{2}$	Crown.	
Quarto (Common) ...	15 \times $11\frac{1}{4}$	Broadside ...	20 \times 15
Octavo (Common) ...	$11\frac{1}{4}$ \times $7\frac{1}{2}$	Long Folio ...	20 \times $7\frac{1}{2}$
Super Royal.		Long Thirds ...	20 \times 5
Broadside ...	$27\frac{1}{2}$ \times 20	Broad Folio ...	15 \times 10
Long Folio ...	$27\frac{1}{2}$ \times 10	Broad Thirds ...	15 \times $6\frac{2}{3}$
Long Thirds ...	$27\frac{1}{2}$ \times $6\frac{2}{3}$	Broad Quarto ...	15 \times 5
Broad Folio ...	20 \times $13\frac{1}{4}$	Quarto (Common) ...	10 \times $7\frac{1}{2}$
Broad Thirds ...	20 \times $9\frac{1}{8}$	Octavo (Common) ...	$7\frac{1}{2}$ \times 5
Broad Quarto ...	20 \times $6\frac{1}{8}$	Post.	
Quarto (Common) ...	$13\frac{1}{4}$ \times 10	Broadside ...	19 \times $15\frac{1}{2}$
Octavo (Common) ...	10 \times $6\frac{1}{8}$	Long Folio ...	19 \times $7\frac{3}{4}$
Royal.		Long Thirds ...	19 \times $5\frac{1}{8}$
Broadside ...	25 \times 20	Broad Folio ...	$15\frac{1}{2}$ \times $9\frac{1}{4}$
Long Folio ...	25 \times 10	Broad Thirds ...	$15\frac{1}{2}$ \times $6\frac{1}{4}$
Long Thirds ...	25 \times $6\frac{2}{3}$	Broad Quarto ...	$15\frac{1}{2}$ \times $4\frac{3}{4}$
Broad Folio ...	20 \times $12\frac{1}{4}$	Quarto (Common) ...	$9\frac{1}{2}$ \times $7\frac{3}{4}$
Broad Thirds ...	20 \times $8\frac{1}{4}$	Octavo (Common) ...	$7\frac{1}{4}$ \times 4
Broad Quarto ...	20 \times $6\frac{1}{4}$	Foolscap.	
Quarto (Common) ...	$12\frac{1}{2}$ \times 10	Broadside ...	17 \times $13\frac{1}{2}$
Octavo (Common) ...	10 \times $6\frac{1}{4}$	Long Folio ...	17 \times $6\frac{3}{4}$
Medium.		Long Thirds ...	17 \times $4\frac{1}{2}$
Broadside ...	24 \times 19	Broad Folio ...	$13\frac{1}{2}$ \times $8\frac{1}{2}$
Long Folio ...	24 \times $9\frac{1}{2}$	Broad Thirds ...	$13\frac{1}{2}$ \times 5
Long Thirds ...	24 \times $6\frac{1}{2}$	Broad Quarto ...	$13\frac{1}{2}$ \times 4
Broad Folio ...	19 \times $12\frac{1}{2}$	Quarto (Common) ...	$8\frac{1}{2}$ \times $6\frac{1}{2}$
Broad Thirds ...	19 \times 8	Octavo (Common) ...	$6\frac{1}{4}$ \times $4\frac{1}{4}$
Broad Quarto ...	19 \times 6	Pott.	
Quarto (Common) ...	12 \times $9\frac{1}{2}$	Broadside ...	$15\frac{1}{2}$ \times $12\frac{1}{2}$
Octavo (Common) ...	$9\frac{1}{2}$ \times 6	Long Folio ...	$15\frac{1}{2}$ \times $6\frac{1}{4}$
Demy.		Long Thirds ...	$15\frac{1}{2}$ \times $4\frac{1}{2}$
Broadside ...	$22\frac{1}{2}$ \times $17\frac{3}{8}$	Broad Folio ...	$12\frac{1}{2}$ \times $7\frac{3}{4}$
Long Folio ...	$22\frac{1}{2}$ \times $8\frac{3}{4}$	Broad Thirds ...	$12\frac{1}{2}$ \times $5\frac{1}{4}$
Long Thirds ...	$22\frac{1}{2}$ \times $5\frac{3}{8}$	Broad Quarto ...	$12\frac{1}{2}$ \times $3\frac{3}{4}$
Broad Folio ...	$17\frac{3}{4}$ \times $11\frac{1}{4}$	Quarto (Common) ...	$7\frac{3}{4}$ \times $6\frac{1}{4}$
		Octavo (Common) ...	$6\frac{1}{4}$ \times $3\frac{3}{4}$

Diphthongs.—A diphthong is a coalition of two vowels into one syllable, as *e, æ*. The English language is, happily, unencumbered by these combinations of letters. Some printers, however, use them in such words as *archæology, mediæval, manoeuvre*, &c., forgetting that *e* and *æ* do not differ in sound from the simple vowel *e*; they are, in such words, utterly worthless, and no better than a mere pedantic encumbrance. They have already been excised from such words as *cemetery, celestial, economical, ether*, &c., but they may be retained in proper names, as *Cæsar, Phœnicia*, &c.

Direction Paper.—See **BOOKWORK**.

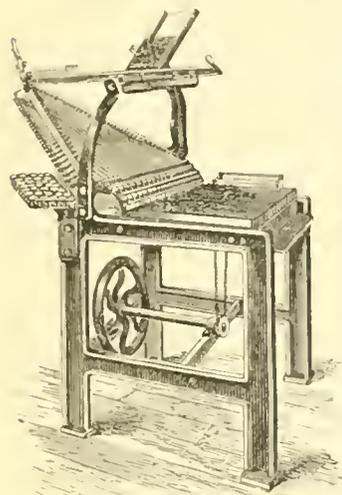
Direction Word.—A word formerly placed at the bottom of a page, on the right hand, to show the connexion with the page following. Directions are now only occasionally used in Law Work.—See **CATCH WORD**.

Dis.—A familiar abbreviation of *Distribution*.

Distributing.—The process of replacing the types in their

respective boxes in the cases, in order to be set up again. This work is done very rapidly by the compositor, who, placing a rule or lead at the head of the matter, takes up what is termed a handful, and, keeping the face of the letter towards him, with the nick on the upper side, rests one end of the rule or lead against the ball of the thumb of the left hand, pressing the other end with the third finger, steadies the matter with his forefinger. He thus has the right hand at liberty, with the thumb and two fingers of which he takes one or more words from the uppermost line and drops the several letters into their respective boxes. It is usual to wet matter before distribution, so as to render it slightly cohesive, the operation being performed with more facility in that state than when dry, and with less chance of the matter being broken. Only so much should be taken up at one time as can be conveniently held in the left hand; too much tires the wrist, and is in danger of going into pie. The compositor should be careful not to throw letters into the case with the faces downwards, as it is apt to batter them; neither should he distribute until his case is too full, as the sorts are apt to overflow into the boxes beneath, thereby creating pie and causing errors to appear in his composition. He should not care so much for distributing quickly as correctly—expedition will come by practice—much time being lost by composing from a dirty case. Many lose time by not carefully looking at the word in their fingers before distributing it; by proper attention this may be avoided, and the workman become an expeditious as well as clean distributor. The learner should never take more between his fingers than he can conveniently hold; if possible, always taking an entire word or words, and keeping the left hand slightly inclined, so that the face of the letter may come immediately under his eye. By practice he will become so well acquainted with the appearance of the beard of the type, that he will be able to know what word he has in his fingers with the very cursory view he may have while lifting it. In distributing, the utmost care should also be taken to place the different spaces in their proper boxes; mixing them improperly is a characteristic of a careless or inferior workman. In winter time some compositors have a habit of wetting matter with hot water, and, after distribution, of placing their cases in front of a fire to dry the letter. Type thus heated should not be handled until perfectly cold, as the antimony used in its composition gives off a noxious vapour, which affects the respiration and the sinews of the person manipulating the type.

Distributing Machine. A machine for performing automatically the operation of type distributing. At the present time there are, we believe, only two descriptions in use in this country—Mackie's and Hattersley's. An illustration of the latter is annexed. It may be described briefly as being the exact reverse of the composing machine (*q.v.*) The matter is placed in a galley, whence it enters, in long lines, upon a bridge. The operator, reading the matter as it approaches a certain point, touches the keyboard, and the letter which answers to the key pressed instantly is conveyed to a receptacle appropriated to that particular letter. By means of this instrument one operator can supply set-up or "classified type" sufficient for two composing machines. By a modification it may be used for distributing into the ordinary cases. A column of type, having been slid into the galley, it is placed in the machine. By the aid of a simple apparatus several



lines are formed into one, there being no handling of the type,

which is conveniently under the eyes of the operator, who, reading the matter, presses the corresponding keys, and the mechanism in connection therewith causes different characters to descend from a given point to their respective receivers. The arrangement is such that the different keys may be pressed in rapid succession, without waiting the arrival of each character in its own receiver; as, although several types may be on the passage simultaneously, self-acting mechanism directs each into its particular receiver. The machine works ordinary type, no special nicking being required, from Long Primer to Ruby inclusive. In conjunction with Hattersley's Composing Machine, the Distributor occupies a space about that taken up by one ordinary double frame. Its price is about £100.

Mr. Mackie, proprietor of the *Warrington Guardian* and other newspapers, has invented several Distributing Machines. Some years ago, he publicly exhibited one in Manchester, which was examined and well spoken of by the trade. It consisted of a comb formed of steel needles, which entered notches in the type. All the *a*'s were notched the 1-32 of an inch from the face of the letter, and on its back; the *b*'s 2-32, the *c*'s 3-32, and so on, thirty letters being thus classed on the back, and thirty (caps., &c.) on the front. On a row of 240 letters being laid before the comb, the points of the needles entered the notches in the *a*'s; a forward motion was then given to the comb which, of course, carried with it all the *a*'s. The motion forward was just enough to draw out the *a*'s, but the motion backwards was 1-32 of an inch more, so that the comb fixed upon the *b*'s next time, and so on while a letter lasted, each time retreating 1-32 of an inch further than before. The caps., &c., notched on the front (printers' nick side), presenting no notch to the needles, were left, and, when sufficiently numerous, were reversed and distributed by themselves. The difficulty Mr. Mackie met with from types wanting to go, through the friction of the comb and of their fellows, when their turn had not arrived, delayed and tried him for a long time. At length, he found a remedy in a row of horizontal retarding needles, placed opposite the type, and working rather stiff between brasses. When a type was positively seized by a needle dropping into its notch, the forward force of the comb was enough to push the retarding needle out of the way, but not in the case of mere friction. In fact, "the weakest went to the wall." The *a*'s, *b*'s, *c*'s, &c., as drawn out, were dropt over a ledge into a box with the necessary divisions, which travelled at a corresponding speed to the machine. The speed of this Distributor is purely a question of size of comb. Thirty-two backward and forward motions of the comb are easily made in a minute, and those motions distribute all the lower-case, however numerous; as if all the type be, say, *a*'s all are taken at once; if all *z*'s, none are taken until the thirty-second turn. If distributing for hand-setting were necessary, this kind of machine could distribute 20,000 to 30,000 an hour. We may add that the cost of notching the type is not over threepence per pound. A second Distributor of Mr. Mackie's, not yet shown to the public, is intended to distribute type on the *flat* ready for his composing machine. It also requires the type to be notched; but up to the present time (1869) constant accuracy has not been secured, owing to inferior workmanship. A third distributor, by Mr. Mackie, dispenses with notched type, and distributes the common letter by merely altering his Composing Machine (*q.v.*). The twenty "pockets" in it are removed, save one. In that the type to be distributed is placed, and every "pick-pocket" as it passes by, takes the bottom type and deposits it at that part of the ring which is opposite to the brass shelf to which it belongs. Upon that shelf a "pusher" at once pushes it out of the way of the next comers. We need only add that these movements are directed by perforations in paper, as in the case of his Composer. Mr. Mackie expects that this will supersede his notched type one, notches, of course, being an objection.

Another Distributing Machine has lately been patented by Mr. Kastenbein, in Paris, which has been pronounced there as a decided success. It is connected with a Composing Machine by the same inventor; but we will only here allude to the distributing part, as is given in the prospectus. The matter for distribution is placed in a frame, secured by a rule and ratchet

slide. The last line is raised by a T slide, which pushes it into a passage, where the line advances towards the left hand by pressing a lever actuated by the motion of the finger keys. A mirror is placed in position over the lines to enable the operator to read them quickly as they advance, whereupon he depresses the corresponding finger-key to cause the following action to take place:—The rod of the finger-key causes a bell crank to turn, which, moving back the slide, uncovers the aperture of the vertical or inclined passage, corresponding with the said finger-key, at the same time, a small lug, fixed on a rod, causes the lever to turn, which moves a small wedge-shaped door by means of levers. This door opens the passage and allows the type to fall, which falling is effected at the same time as the above operation, by the following mechanism:—The tail of each finger-key in being raised causes a transfer bar to be raised vertically, which itself causes the levers to oscillate. These levers, in turning, also turn a spindle and arm, which causes the slide to move forward by means of the lever; the slide, in being thus moved forward, places the extreme left-hand type over the opening of the passage and causes it to fall into the same. The slide, which has receded, allows the type to fall into the fixed type box corresponding therewith. All the above movements are effected instantaneously and simultaneously as soon as the workman, after reading the letter of the last type, depresses the corresponding finger-key. This having been done, the workman releases the finger-key, which allows of the backward motion of the slide into its original position, whereby the sorted type is caused to pass into its respective boxes. There are as many type boxes as letters and characters, that is to say, ninety-six, corresponding with the same number of moveable type boxes, which are removed as soon as they are full. Each passage corresponds with two fixed type boxes, one to the right and one to the left. A flap or door establishes a communication between the said passage and either the right-hand or left-hand box, according as it is turned over to the one side or the other—such motion of the flap being effected by the workman by means of a pedal and levers. For this purpose the types are divided into two classes—one comprising the letters much in use, while the other includes those little used, and one of each class is marked upon each of the finger-keys; and these pairs of letters are so arranged in connection with the passages and the type boxes that for sorting a much-used letter into its type box the operator has only to depress the finger-key; while for sorting the less-used letters the operator has to depress both the finger-key and the pedal. In the first case the type falls into the right-hand box, and in the second case into the left-hand box. For increasing at will the size of the upper orifice of the passage two finger-keys are arranged to regulate the same by means of the spring levers.

Division of Words.—In the process of composition it is frequently found that a complete line cannot be formed without making use of a portion of a word. It then becomes the duty of the workman to consider how he may divide the word with judgment and propriety. The art of dividing words is called Syllabication, and it has engaged the attention of most of the lexicographers and grammarians. Although a large number of formal rules have been drawn up to guide the compositor in this respect, the following, by Lindley Murray, contain all that is practically necessary to be borne in mind:—

1. A single consonant between two vowels must be joined to the latter syllable; as *de-light, bri-dal, re-source*; except the letter *x*, as *ex-ist, ear-amine*; and except, likewise, words compounded, as *up-on, un-even, dis-ease*.

2. Two consonants proper to begin a word, must not be separated; as *fa-ble, sti-ple*. But when they come between two vowels, and are such as cannot begin a word, they must be divided; as, *ut-most, un-der, in-sect, er-ror, cof-fin*.

If the preceding syllable is short, the consonants must be separated; as, *cus-tard, pub-lic, gos-ling*.

3. When three consonants meet in the middle of a word, if they can begin a word, and the preceding vowel begin long, they are not to be separated; as, *de-throne, de-stroy*. But when the vowel of the preceding syllable is pronounced short, one of the consonants always belongs to that syllable, as, *dis-tract, dis-prove, dis-train*.

4. When three or four consonants, which are not proper to begin a word, meet between two vowels, the first consonant is always kept with the first syllable in the division; as, *ab-stain, com-plete, em-broil, daw-dler, dap-ple, con-strain*.

5. Two vowels, not being a diphthong, must be divided into separate syllables; as, *cru-el, deni-al soci-ety*.

A diphthong immediately preceding a vowel is to be separated from it; as, *roy-al, pow-er, jew-el*.

6. Compounded words must be traced into the simple words of which they are composed; as, *ice-house, glow-worm, over-power, never-the-less*.

7. Grammatical and other particular terminations are generally separated; as, *teach-est, teach-eth, teach-ing, teach-er, contend-est, great-er, wretch-ed, good-ness, free-dom, false-hood*.

Two consonants which form but one sound are never separated; as, *e-cho, fa-ther, pro-phet, an-chor, bi-shop*. They are to be considered as a single letter.

8. In derivative words, the additional syllables are separated; as, *sweet-er, sweet-est, sweet-ly; learn-ed, learn-eth, learn-ing; dis-like, mis-lead, un-even; call-ed, roll-er, dress-ing; gold-en, bolt-ed, believ-er, pleas-ing*.

EXCEPTIONS.—When the derivative word doubles the single letter of the primitive, one of these letters is joined to the termination; as, *beg, beg-gar; fat, fat-ter; bed, bed-ding*.

When the additional syllable is preceded by *c* or *g* soft, the *c* or *g* is added to that syllable; as, *of-fen-ces, cotta-ges, pro-noun-cer, indul-ging; ra-cing, pla-ced, ran-ger, chan-ging, chan-ged*.

When the preceding or single vowel is long, the consonant, if single, is joined to the termination; as, *ba-ker, ba-king, ho-ping, bro-ken, po-ker, bo-ny, wri-ter, sla-vish, min-ced, sa-ved*.

The termination *y* is not to be placed alone; as, *san-dy, gras-sy, du-ty, dus-ty, mos-sy, fros-ty, hea-dy, woo-dy*; except, *dough-y, snow-y, string-y*, and a few others. But even in these exceptions it would be proper to avoid beginning a line with the termination *y*.

There are methods, differing in some respects from the preceding, for dividing Latin, Greek, and French respectively, which readers acquainted with the languages will understand.

Wilson's "Treatise on English Punctuation" contains several additional rules for the division of English words, which are of value:—

It is desirable that compound and derivative words should, at the ends of lines, be divided in such a manner as to indicate their principal parts. Thus, *school-master* is preferable to *schoolmas-ter, disapprove to disap-prove, resent-ment to re-sentment, ortho-doxy to orthodoxy*; though, as regards the analyses of words into syllables, the latter is unobjectionable. From the narrowness of the printed line, however, in some books, the principle recommended cannot always be adhered to.

The terminations *tion, sion, ceal, tial*, and many others, formerly pronounced as two syllables, but now only as one, must not be divided either in spelling or at the end of a line.

A syllable consisting of only one letter, as the *a* in *creation*, should not commence a line. This word would be better divided *crea-tion*; and so all others of a similar kind. But such a syllable, coming immediately after a primitive, is by some printers brought to the beginning, as *consider-able*.

A line of print must not end with the first syllable of a word when it consists of a single letter, as *a-bide, e-normous*, nor begin with the last syllable when it is formed of only two letters, as *nation-al, teach-er, similar-ly*. For regard should be had to the principles of taste and beauty as well as to the laws of syllabication.

Three or more successive lines should not end with a hyphen. A little care on the part of the compositor will in general prevent an appearance so offensive to a good eye. Divisions, indeed, except for purposes of spelling and lexicography, should take place as seldom as possible.

Doc.—A familiar abbreviation of "document;" i.e. the memorandum a compositor keeps of the quantity of work he has executed.

Dotted Quadrats.—These are cast, similarly to leaders, in sizes from one to four ems, but with the dots much lighter

and closer together, so as to imitate dotted brass rule, which they are intended to supersede for certain classes of work. They are very useful for setting collecting-cards, as a number of rows can quickly be set up, with similar rows of whites, allowing so many two ems or three ems for the squares and the remainder for a wider column, upon which a name can be written. The required number of lines having been set, the compositor has then only to drop in the column rules and the table is complete, with the exception of the heading.

Double.—When a word, line, or sentence is composed twice over, it is called a "double." In presswork a sheet is said to be doubled when instead of one clear impression being upon it, there are traces of two indistinct ones.

Double-Cylinder.—See MACHINES.

Double Dagger. A reference mark, thus (†), which stands third in order, and follows the dagger or obelisk.

Double Atlas. A size of drawing paper. The sheet is 55 in. × 31½ in.

Double Letters.—Two letters cast on one shank, as *æ*, *œ*, *ß*, *fi*, &c.—See LIGATURES.

Double Narrow.—A piece of furniture equal in breadth to two narrow quotations, or six picas.—See FURNITURE.

Double Pica.—The name of a type one size smaller than two-line Pica, and equal in depth to two Small-Pica bodies. Reglet is also made to this body.

Draw.—When a forme has been badly locked up or the lines insufficiently justified, the action of the roller frequently causes one or more of them to be drawn up, either causing an "out," if the letter is removed altogether, or a batter if it falls upon the face of the forme. Care on the part of the compositor effectually guards against this accident.

Dressing a Chase.—Fitting a chase or forme with the proper furniture, silesticks, and quoins.—See MARGIN.

Drive out.—Matter is driven out when it is set widely, or branched out. Many compositors indulge in a greedy habit of spacing their matter widely near the end of paragraph, in order to drive it out so as to secure a fat breakline. This system is reprehensible, as it distiguers the page, and should be checked by the reader marking it back again on the proof. When, by reason of insertions in an author's proof, the sheet is overrun, the surplus lines at the end are termed "driven-out matter."

Dropping out.—When any letters, spaces, or quadrats drop out of a forme after it is locked up and being lifted from the imposing surface or the press. The causes of this are, bad justification, some of the leads riding, furniture binding, wrong founts, &c.

Duodecimo.—The size of a book usually written "12mo." It is formed by folding a sheet of paper into twelve portions or leaves, making 24 pp.—See IMPOSING.

Dry Colours.—Of late years, the system has been adopted, with great success, of producing superior qualities of coloured printing inks by mixing fine dry colours with varnish. The following particulars are extracted from the *American Printer*, the only typographical manual, we believe, that refers to this interesting subject:—

1. No more should be mixed at a time than will be required for the job in hand.

2. Coloured inks should be mixed upon a slate or marble slab, by means of the muller, and never upon an iron or other metallic table. The table, before mixing, should be thoroughly clean, and perfectly free from the slightest soil or trace of other inks.

3. For working coloured inks the roller should not be too hard, and should possess a biting, elastic face. When change of colour is required it should be cleaned with turpentine, and a moist sponge passed over the face, allowing a few minutes for the roller to dry before resuming its use.

4. Various shades may be produced by observing the following directions:—

BRIGHT PINK INK.—Use Carmine or Crimson Lake.

DEEP SCARLET.—To Carmine add a little deep Vermillion.

BRIGHT RED.—To pale Vermillion, add Carmine.

DEEP LILAC.—To Cobalt Blue, add a little Carmine.

PALE LILAC.—To Carmine, add a little Cobalt Blue.

BRIGHT PALE BLUE.—Cobalt.

DEEP BRONZE BLUE.—Chinese.

GREEN.—To pale Chrome, add Chinese Blue; any shade can be obtained by increasing or diminishing either colour.

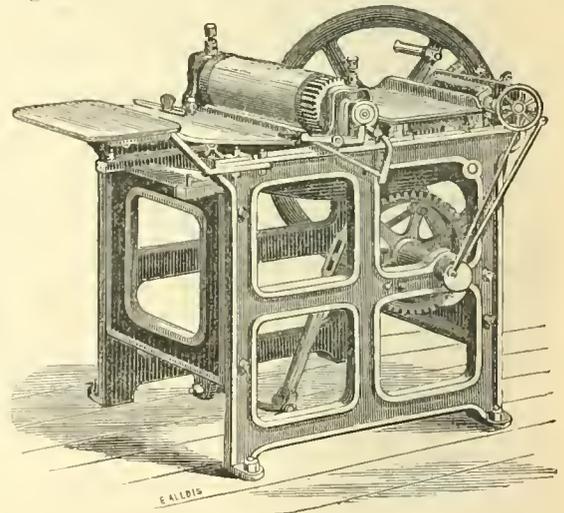
EMERALD GREEN.—Mix pale Chrome with a little Chinese Blue, then add the Emerald until the tint is satisfactory.

AMBER.—To pale Chrome, add a little Carmine.

DEEP BROWN.—Burnt Umber, with a little Scarlet Lake.

PALE BROWN.—Burnt Sienna; a rich shade is made by adding a little Lake as above.

Duncan's Machines.—A description of letter-press printing machines invented by Mr. George Duncan, an engineer, of Liverpool, who claims to be the inventor of two-colour printing machines, and believes that, by his machines, printing in two colours without removing the sheet is as easy of accomplishment as printing in one colour only, and at a very material saving of cost. The most exact register is secured, and the distributing arrangements are very effective—three rollers passing completely over the forme, thereby securing perfect distribution and uniformity of colour. The other descriptions of machines produced by the same manufacturer are called the "Diamond" Single Cylinder Printing Machines, and "Little Diamond" Jobbing Machine. An engraving of the latter is here given:—



Each of these machines is characterised by most important improvements.

Dusting Colours.—These are similar to those described above under the heading DRY COLOURS, only they are ground in a mill to a very fine powder. In using them, however, for printing purposes, instead of being mixed with the varnish, they are dusted over it; that is to say, the forme is rolled over with varnish, as with ordinary ink, and after the impression is pulled the colours are dusted over it with a broad camel's-hair brush or a clean hare's foot; some pressmen use wool. When the colours are well dried on the impression, the superfluous powder can be cleared off the sheet,

E.

Ear of the Frisket.—Otherwise, the thumb-piece. A small piece of iron which projects from the edge of the frisket nearest to the workman. By taking hold of it he turns down both the frisket and the tympan. After the sheet has been printed, he raises the tympan, and then nimbly turns up the frisket again by means of the ear.

Eighteenmo.—A sheet of paper folded into eighteen leaves, making thirty-six pages. It is usually termed eighteens, from being written 18mo.; but is sometimes more correctly called Octodecimo.

Electrotyping.—A process which has recently come into use in place of stereotyping, to which it is superior in two ways, especially for woodcuts or newspaper headings. The copy or plate being of copper, and therefore much harder than type metal, long numbers can be more profitably and clearly produced; and the strokes being finer, and the sunk parts deeper, the impression from an electrotype more nearly approaches one from the type or engraving itself. The art of plating by electricity was invented almost simultaneously by Spencer, of Liverpool, and Professor Jacobi, of St. Petersburg, in 1837; made public by the latter, October 5, 1838, and by the former, September 12th, 1839. Murray applied blacklead to non-metallic bodies as a conducting surface in January, 1840, and in the following April the first specimen of printing from an electrotype appeared in a London periodical. For an account of the chemical processes involved, we must refer the reader to any elementary book on the subject of electro-metallurgy, as well as for a description of the utensils employed, such as the battery and the depositing trough; the metals, solutions, &c., are the same as those used in various trades which have utilized electricity in this manner. What we propose to do is to show their special adaptation to the process of obtaining copper casts of type formes, and the system of preparing these for the press. Since's battery is the most preferable for this purpose. The mechanical part of the process now familiarly known as electrotyping, consists of Moulding, Backing-in the Plates, and Finishing. Mouldings may be made from woodcuts. The most effectual moulding substance is the best yellow wax, to which two to fifteen per cent. of turpentine may be added in cold water to prevent it from cracking whilst cooking. New wax should be boiled several hours before moulding. It should be kept in a large iron fish-kettle, to be laded out as required. Should it become burnt, it is useless. To prepare woodcuts for moulding, lock up the woodcut in a chase with a type-high bevelled metal clump border all round it. Brush the cut over sparingly with turpentine to remove the printing ink which remains on the block from the taking off of proofs. Should the cut be an old one, and the fine lines much clogged up, which the turpentine fails to remove, it is better to brush the cuts with a hard tooth-brush, dipped in *liquor potassæ*. The type-high clumps prevent the wax from spreading, and the fac simile of them forming an outside border to the shell, becomes a barrier to the metal, retarding it from getting to the face of the shell during the process of backing; it also forms a wall for the dogs of the lathe to bite firmly to while the back of the plate is being turned. A wooden straight-edge should now be placed across the forme to see if the cut is of the same height as the clumps; if not, the cut must be underlaid—for it is desirable that the cut should be a trifle higher than the clumps. Let the cut now stand until it is perfectly dry, then proceed to blacklead the forme by placing it in the blackleading tray, and well brush it over with the blacklead, taking care that the cut be well bronzed over, and that no particles of the lead be left in any of the fine lines of the engraving. The blacklead should be free from all adulteration. To prepare a type forme for moulding, surround it with the bevelled type-high clumps, placing the bevelled side against the type. When locked up and planed down perfectly even, lay the forme on a board, and take it to a trough containing clean water; next mix plaster of Paris and clean water to the consistency of cream, then pour the mixture over the forme, well plastering it with the hand into the lines and spaces. Let the forme rest till the plaster begins to set, then, with a piece of reglet, scrape off the plaster level with

the face of the letter, and with a water-brush wash out the plaster to the depth required, which should be to about the shoulder of the type. This process is exactly similar to the first in the plaster system of stereotyping. Well sluice the forme at the back as well as the face, and stand it on end in the forme-rack to drain for an hour or so. After observing that the forme is tightly locked up, plane it again, so as not to crack the plaster, and see that the face of the forme is even; take it to the blacklead trough, and well bronze it all over, as described for woodcuts, taking care that the forme is dry and free from moisture. It is now ready for being moulded. The moulding tray should be something in the shape of the forme to be moulded; it may be made of stereotype metal. In appearance it resembles a shallow printers' galley, but surrounded on all four sides: about a Pica or an English in depth. Two pieces of stout copper wire are soldered on to the edge in such a manner that it may be suspended in the depositing trough. Warm the moulding tray a little, lay it on a flat table, perfectly level, and with a tin ladle pour out the wax into the tray in a continuous stream, with a slow, steady, rotary motion, within an inch or so of the sides of the moulding tray. Let the wax set all over, and then brush over the surface with plenty of blacklead, laying it on with a soft hat-brush. The sooner the blacklead is applied to the surface of the wax, without disturbing the wax or marking the surface with the hairs of the brush, the better will be the mould, as more blacklead will be held on the surface. The forme or woodcut must be moulded while the wax is yet warm; but it must be perfectly set. The temperature of the room in which this important process is performed must be maintained at summer-heat. The wax, in cooling, ought to present a smooth and even surface. The moulding press may be either (for small jobs) a copying press or a stereotype moulding press; the higher the temperature at which the wax is moulded the less the pressure required. Now place the forme exactly under the centre of the plaster, with the moulding tray containing the slightly-warm wax upon it. The amount of pressure requisite to displace the wax must be learned by experience: too shallow an impression causes a deal of work for the building knife, and an unnecessary depth of dip may result in damage to the mould in delivery. To deliver the mould from the forme a pair of litters is wanted, although a thin screwdriver may be used. Insert the litters between the furniture of the forme and the edge of the moulding tray at the top and bottom of the page, and gently, with a steady hand, apply leverage gradually until the mould is relieved from the mould or woodcut. Should the mould not be a good one, melt the wax and commence again. Never lift a mould from the sides of the forme, or damage will result to the raised excrescences of the mould, which are to form the counters in the plate. The building knife is made of copper. It is half knife and half spoon. Have close at hand a small cauldron of melted wax, and a gas jet by which to warm the building knife. Draw the knife along the projections that are to be raised still higher, and the wax will follow. The object of this is, that where paragraphs or open work occur, the parts can be lowered, to obviate the necessity of chiselling the plates, as in stereotyping. The building knife can be heated by dipping it in molten metal, and the building can be done by holding the hot knife in one hand, and a stick of hard dry wax in the other, feeding the building knife as you go along the spaces between the lines. The mould having been finished and pronounced satisfactory, blacklead it all over, filling all its interstices and brushing the blacklead well in. Now brush out all the particles of the latter, except what is bronzed on by the previous operation. A pair of bellows may be used, or a flat badger's hair brush. If the mould be held in the light, at a certain angle, the operator may discern whether even the finest lines are highly polished. If any line or letter appears dull, the blacklead is not sufficiently blown or brushed out of such parts. To prepare the blacklead mould for immersion into the depositing trough, paint the back and sides, and also the edges of the moulding tray, leaving a spot here and there all round for the copper deposit to start from. These spots may be slightly scraped bright, to facilitate the deposit of the copper, which will shoot out from these spots towards the centre of the blacklead surface, gradually covering it. As soon as it is placed

in the depositing trough containing the copper solution, the moulding tray containing the mould must be hung on to the brass rod of the depositing trough with brass S hooks. The connections must all be clean and bright. The connection of the battery having been made, and the copper plate to be reduced placed in its proper position, the current of electricity being complete, submerge the mould in the sulphate of copper solution, hang on to the S hooks, and see that the whole of the moulding frame is under the solution, where it can remain until the deposit is sufficient to enable you to judge if all is going on well. Should the copper deposit in places where it is not required, the spot must be dried, and the place stopped out with hot wax. The time usually occupied to deposit thick enough for ordinary purposes is twenty-four hours; but this must be regulated by judgment. To prevent air-bubbles forming on the face of the mould, take it out of the trough and dip it in diluted methylated spirit (half spirit and half water). The copper being deposited of the required thickness, proceed to disengage the shell from the wax by placing the mould with its back on an inclined board; then pour boiling water over the shell, gradually lifting it at one corner. The boiling water melts the surface of the wax, and allows the shell to be released, not, however, without having a thin coating of wax over the face of it, which should be washed out with a mixture of turpentine, benzole, and powdered emery. To prepare the shell for backing, procure a small earthenware gallipot; into this place some zinc cuttings. Take it into the open air and pour on a quantity of hydrochloric acid (muriatic acid or spirits of salts). The instant the acid comes in connection with the zinc heat is generated, an offensive gas is given off, and ultimately a soldering fluid is formed, which must stand till it is cool. The back of the shell may be evenly wetted with this fluid with a brush. The next step is to tin and back in the shell. Procure some good strip solder, fuse it, and pour from a ladle through a gauze strainer, letting it fall into water, which will cause it to become like irregular shaped spots. Some of these must be sprinkled over the back of the shell, after it is wetted with the soldering fluid. For the next process a furnace is required, with a crane and tackle apparatus over it, to which is attached a pan, the shell being placed therein. Fix the tackle, swing the crane to its position, and lower the pan to the top of the type metal contained in the pot above the furnace. The heat must gradually extend itself to the shell and the solder, and when the solder is fused the shell will be tinned all over the back, and ready to receive the fused type-metal. The iron melting pot should be square, with a flange; it should be about three inches deep. Lower gradually, till it floats on the top of the metal. The solder being melted, pour molten type metal (of the same temperature as the shell, if possible) over the shell, gradually and with a rotary motion, until the shell shall be covered and thick enough to enable the electrotype to undergo the process of finishing. After remaining some time, draw up the pan, and let it cool as gradually as possible. The metal for backing-in must be poor, say a hundredweight of type-metal to an equal weight of lead, and five pounds of bar tin. The plate, when cool, must be released from the backing pan, and the face washed with turpentine, benzole, and emery powder. It must then be dried and polished by rubbing it with sawdust, and it is ready for the back being turned in the lathe. Having, by means of the plane and block, roughly squared the plate, pass a wooden straight-edge over it. Make it perfectly level, then "chuck" it into the lathe. The back now requires to be turned, taking off at one cut not more than a Long Primer or Pica at the most. The best gauge for the thickness of the plate is a Pica. The remainder of the process is the same as for Stereotypes (*q.v.*).

Ellipsis.—The omission of part of a word is usually denoted by short lines, called rules, of various lengths, according to the number of letters omitted, as *The Right Hon. John B—t*. If one or more words are omitted, or supposed to be omitted, it is more usual, and has a neater appearance, to use dots or leaders. Thus:—

The comparative of superiority is expressed in Spanish by the words, *mas que*; and that of inferiority by *menos que*.

If a line or more be omitted, then the most conspicuous marks are asterisks; as,

Let us go forth in summer's glorious prime,
And leave the din of cities for a while;
* * * * * From the breezy heights
Of Pyrenean pinnacles behold
Deep vales and forests, purple glens, and plains.

Elzevir. The modernised name of types cut in imitation of those used by the celebrated typefounders and printers, of Leyden—the Elsevier family.

Em.—The square of the body of a type. An em Pica is the unit of measurement in the length and breadth of pages. Furniture, rule, leads, and clumps are made into measures which are multiples of the Pica em.

Embossed Typography.—A system of printing for the use of the blind. Instead of colour being used, the surface of the sheet is embossed, and the characters can be distinguished on the fingers being passed over them. Many systems are in use, ranging from modifications of the Roman alphabet to stenography, and each, according to its supporters, possessing many advantages. It has not been decided upon which is the best system, but the importance of the subject, involving the ability of the blind to read with ease and rapidity, has engaged the attention of many philanthropists. Embossed typography was introduced in 1827.

Emerald.—The name of a type one size larger than Nonpareil, and one smaller than Mimion. According to Figgins's standard, there are 128 lines to the foot; to that of the Patent Type Founding Company, 131½.

Eminent English Printers.—See APPENDIX at the end of this Dictionary.

En.—Half the breadth of an em, in any body of type. In reckoning the work done by compositors, the en is considered as the equivalent of a letter. Thus, if the measure of a page be twenty ems Pica, there are forty ens in it, and the breadth of an en being taken as the average breadth of a type, the compositor is paid for setting up forty letters. But if a work is set up in any other type that may cause it to be a thick space more than the number of even ens in the width, an extra en is charged. Likewise, in casting up the length of a page, an en counts for an extra em, if it is that much over the number of even ems. It is a rough-and-ready system, but not at all an accurate one, as a very little experimenting will show. A whole fount, upper and lower, varies in breadth from a thick space to about an em; all the capitals, except the *I*, being more than an en, while a large majority of sorts in the lower-case, excepting the *m*, *w*, *ff*, *ffl*, and a few sorts equal to an en quadrat, are less than an en. If a capital letter was used in every word, the en might be nearly the average, but as nearly all the composition comes out of the lower case, compositors are certainly losers by the present method of casting up matter. For example, take the type in which this Dictionary is set (Brevier); the five vowels being the most frequently used, it will be found that instead of making five ens, as they ought, they require a thin space to make them so. In this case there are six pieces composed and only five charged; a loss to the compositor of one sixth, which is brought out more plainly as follows:—The space between the colons is the space which ought to be occupied by the words, were the en the true average of the breadth.

: Sure my true love's natal day should inspire a thrilling lay. :

In this case, sixty-one pieces have been lifted, but as the space they occupy is only that of fifty-five ens, and the compositor is paid only for that number of letters, he loses one tenth by the present system. In bastard founts the difference is still greater; but when the scale was altered, at the time of the Advance of Wages Movement, a provision was made that an extra charge per thousand should be made on founts whose lower-case alphabet occupied less space than twenty-six ens. A committee of compositors was appointed in 1847, in London, to devise a better mode of casting up type, but failed in its object, the present mode of averaging being preferred to any other then suggested.

Enamelled Cards.—Cards with a glazed surface, the fine glaze for which is obtained by employing sulphate of baryta. More difficulty is experienced in working enamelled-cards than ivory or ordinary cards, on account of the tendency of the enamel to peel off on to the face of the type, especially with coloured inks. Cards that have been in stock for twelve months are better than new ones for printing purposes, as the enamel is thoroughly dried, and adheres to the card. Pressmen manipulate the ink in various ways to prevent the ink coming off on to the type: some use varnish; others grind up a very small piece of soap in the ink. The harder the substance in the tympan the better—millboard in preference to sheets—so as to give only a surface impression.

End a Break.—Ending with a broken or short line, as in the case of an ordinary paragraph. It is the exact reverse of “end even” or “make even” (*q.v.*).

English.—The name of a type one size larger than Pica and one smaller than Great Primer. In Germany it is called by the name of “Mittel;” by the French and Dutch, “St. Augustyn,” from the fact that the writings of that father were the first works that were done in that size letter. Its proportions to the foot are as follows, according to the different standards:—

Caslon, 64; Figgins, 64; Reed & Fox, 64½; The Patent Type Founding Company, 65½.

Engraving.—Engraving was practised at a very early age by the Egyptians, who used wooden stamps, marked with hieroglyphics, for the purpose of marking their bricks. It is first mentioned B.C. 1491, by Moses (Exodus xxviii., 9), who was commanded to take two onyx stones and *grave* on them the names of the children of Israel. Its revival in Europe dates from the 15th century. Mezzotint engraving was invented by Col. von Siegen about 1643; engraving in colours by J. C. Le Blond about 1725; in imitation of pencil by Gilles des Marteaux in 1756; and aquatint engraving by Le Prince about 1762. Engraving on copper, or chalcography, is said to have been practised in Germany about 1450. Some early plates by Albert Durer dated 1515, 1516, are believed to be impressions from steel plates. This metal, however, was very seldom employed by engravers, only one specimen, executed by Mr. J. I. Smith, in 1805, being known until 1818, when Mr. C. Warren exhibited an impression from a soft steel plate to the Society of Arts. Engraving on wood is said to have been practised by the Chinese as early as B.C. 1120. The precise date of its introduction into Europe is unknown. Some authorities state that a series of wood-cuts, illustrative of the career of Alexander the Great, was engraved by the two Cunio, in 1285. This story is, however, rather doubtful; and perhaps the origin of the art may be traced to the wooden blocks used by notaries for stamping monograms in the 13th century, and to the engraved playing cards which appeared in France about 1340. The earliest woodcut in existence represents St. Christopher with the infant Saviour, and is dated 1423. Many block books exist of about the year 1430; but the art was not brought to great perfection till the commencement of the 16th century. Albert Durer (1471—1528); Lucas, of Leyden (1494—1533); Holbein, whose Dance of Death appeared at Lyons in 1538; Gerard Audran (1640—1703); Woollet (1735—1785); Thomas Bewick (1753—1828); Nesbit, born in 1775; and Harvey, born in 1796, rank foremost among the old school of engravers; but the modern school, stimulated and encouraged by the growing taste of the public for finely illustrated books and periodicals, may be said to have completely surpassed all their predecessors. We cannot devote space sufficient to describe these various processes in full, but the following particulars may be useful. The letter-press printer should learn to hold and to use the graver and scoper, in order that he may be able to cut a simple block; take away lines that are superfluous; or alter a jobbing letter or two on an emergency. A few hours' practice will enable him to do these with ease and expedition. Wood-engraving and plate-engraving differ in the following particulars. In wood-engraving all the lines and work are left standing in relief; this is accomplished by cutting away the ground on both sides of every line, so that in outlining a wood-block two cuts with the graver complete a line; in cavity engraving, such as copper-plate

work, the reverse is the order of things, for there the black line is cut away and the ground left untouched, the actual engraving, with respect to lines, being done with one cut of the graver; but of course it has to be touched up where required, the same as a woodcut has occasionally to be treated. Blocks that have the subject either drawn or transferred on them should be perfectly type high—but if there be any variation it is much better that it should be under than over, because the block can be more readily underlaid to bring it to the right height than it can be brought up in the overlays. Place the block upon the pad (*q.v.*), which must rest upon a work bench sufficiently high, that when the left hand is holding the block and the right hand is cutting it both elbows should be nearly on a level with the shoulders. Place the graver (*q.v.*) in the right hand, with the handle fair against the bottom joint of the little finger, and the hand closed so as to grasp the handle; the blade of the graver must rest against the extended thumb in such a manner that the blade can slip easily to and fro, and yet act as a guide to the point of the tool; before commencing to work it is as well to practise holding and gliding the tool a few times; next proceed to cut a straight line holding the tool very nearly parallel with the face of the block, being careful not to slip the tool through any of the black lines or work; take but one journey, however large the block may be, until you arrive at a bar, at which go boldly up to, but not into, or the engraving may be seriously damaged. When curved or irregular shaped lines have to be engraved, the right hand and tool, when in position, should not be allowed to move, but the block on the pad must be moved to the point of the tool by the left hand. If, for instance, a wavy line were to be cut, the tool would have to be held steady and the block pushed up to it and wavy to the desired pattern. The reason why a piece is sliced off the underside of the handle of the graver, is to allow the tool to work in the centre of a large block, to prevent the point of the tool digging into the block instead of sliding and cutting at the same time. The wood-block being cut in rounds or slices, instead of planks, out of the tree, it is necessary, when large blocks are required, to have them made in sections and screwed or bolted together; the latter mode, although more expensive, is far superior, which any letter-press printer can verify, as they are not so apt to warp or disserve. In cutting, the wood leaves the tool in a crisp, pleasant way, owing to the block being prepared the end-way of the grain. Beginners can hardly work too slowly or too deliberately at first, as by carefulness in this particular many self-taught have become first-rate engravers, while others, with the superior advantage of good masters, have never reached above mediocrity. Hold the block in the left hand in such a manner that the hand be kept below the surface of the block, as the tool is apt to slip over the block and stick into any opposing surface which it meets; so that should the left hand be above the surface of the block some pain and inconvenience may arise. Scorpers (*q.v.*) are made both flat and round; the latter, however, are principally used in wood engraving, and are in sets of different widths, by which arrangement the space of blank wood between the lines, after outlining, may be taken away, in many instances, at once, by adapting the use of the scoper to the width of whites between the lines. The scoper has to be held in the right hand in the same way as a graver, but has to be elevated, so that the tool may be slightly angular with the block, instead of nearly parallel, as recommended with respect to the graver, and instead of moving the block it must be fairly held in position until a change of position is necessary. If a straight gutter has to be cut away, the process will be as follows:—Place the block, if a small one, in the centre of the pad, and commence cutting away at the extreme left-hand side of the block, working from where you commenced. Bring the tool gradually back to the extreme right, cutting or chipping only a small piece of wood away at a time. This is the only practicable method of working, for whereas the graver works from right to left, the scoper works reversely; the graver cuts a clear line right away through; the scoper chips a little bit at a time with a backward movement. In clearing away the superfluous wood round the edges adopt the same principle; cut *from* the work, finishing at the edge of the block. Where large open spaces have to be cut away the scoper should take a channel the full length of such space, from end to end, then begin again

close at the side of the first channel, and produce another, and so on till the whole has been gone over; then, with the flat scrapper, go over the rough ground, and smooth to a slightly appearance. The flat scrapper is used to lower the surface of different parts of a block—the edges of skies, for instance,—as the impressions would probably give the appearance of dots at the ends of the lines, or not allow of so graduated a tinting—going off, as it were, to nothing. It is also used where light effects are wished for in certain parts of a block, and the engraver has not sufficient command in the pressman's artistic capabilities; but this is not advisable, except in very exceptional cases. When a wood cut left on the press all night has become warped, lay it upon its face on the imposing stone, with a few thicknesses of damp paper underneath it, and place over it a planer, flat side downwards, with a weight upon it; in the course of a few hours the block will be restored to its original flatness. This plan is applicable to steeping the block in water, as the steeping swells the lines of the engraving, and, consequently, affects the impression. To preserve the original effect of the cut as it came from the hands of the artist, the block should never be wet with water; and when it has been worked in a forme with types it should be taken out before the forme is washed. To prevent moulding during the dinner-hour or night, turn the tympan down upon the forme, run the carriage in, and pulling the bar-handle loose, fasten it so that it will remain in this position during the night. A fine engraving on wood should never be brushed over with ley; the best method is to wipe the ink off with a fine sponge, damped with spirits of turpentine; and, if it gets foul at working, clean it with a soft brush and spirits of turpentine; then wipe the surface dry and pull two or three impressions on dry waste paper. Spirits of turpentine take off the ink quicker, and affect the wood less than any other article. The facility with which the block is again brought into a working state more than compensates for the trifling additional expense incurred. When a few proofs only are wanted from a small engraving good impressions may be obtained with little trouble on dry India paper with about six thicknesses of the same paper laid over it, and pulled without the tympan; if proofs are wanted from large ones it will be found advantageous to put the India paper for a few moments into the middle of a heap of damp paper. Further particulars concerning woodcuts and printing them will be found under the title of *Presswork* (*q.v.*). Engraving on stone is much in use for presentations of jewellery, furniture, maps, plans, and architectural drawings. Choose a stone free from veins, chalk marks, or any superficial inaccuracies; place it horizontally on a table, and cover it with a very thin solution of gum and acid, a little colouring matter being mixed with it, to enable the artist to clearly see the progress he makes; this coating effectually preserves the stone from imbibing greasy substances; nevertheless the smallest possible quantity of the solution must only be applied, or the point will not readily penetrate through the coating of gum to the stone. To engrave on stone, it will be necessary to obtain a fine point or a diamond on a needle point, fixed in a handle and held like a pencil and used to scratch the subject into the stone, which is a different procedure to plate-engraving or etching. The engraver should have at hand a hare's foot, to brush away the dust scratched out of the stone, as by blowing away with the mouth, risk is incurred by spittle-spray. It is unnecessary to make deep scratches to produce a firm and clear line; a light and clear line of uniform depth should be maintained throughout. When the engraving is done, rub oil into the lines made by the etching point, and let it stand an hour; wipe off the superfluous oil and wash off the gum; the stone will then be ready for work. No moisture must, on any account, be suffered to touch the stone during the etching process. Proofs may be taken during the progress of the engraving for the artist's guidance; but, before recommencing, re-cover the stone with the coloured preparation, and treat as before-mentioned. To make any alterations, remove the stone, and pass over a solution of acid; then make the alteration. The printing of engravings from stone is executed as follows:—After the engraving is prepared, wash the stone with a damp rag, then put a few drops of turpentine on to the inking slab, and, with the rubber, mix the ink and turps; after which, rub the stone well with the inky turps, acting in place

of a roller for inking the subject; then with a second clean, damp cloth wipe the stone over, till clean; then lay on the paper, on which place a thin, clean backing sheet; next, a fine printer's blanket; then a thin millboard; lastly, put down the tympan, and pull through the lithographic press; the operation is then completed. The rubber is made by getting a block of wood, about 3½ in. × 5 in., and about 3 in. thick; this is covered with a few alternate layers of coarse blanketing and fine flannel, letting the last and outside layer, which is used next the stone, be the finest.

Engraving on Copper and Steel.—See *PRINTING—COPPER-PLATE*.

Etching. See *LITHOGRAPHY*.

Extended Letters.—Letters that have a broader face than is proportionate to their bodies, as the following specimen of Brevier Extended Sanserif!—

EASTER MONDAY REVIEW

Errata.—Errors that have escaped both the author and the printer's reader, generally printed in small type, sometimes being placed at the end and sometimes at the beginning of the book. As they are a sign of carelessness somewhere, the errata should never be prominent. Such errors are generally the fault of the author, who does not take the trouble to write out his copy legibly; and when he has a proof sent to him for correction, passes over what he ought to notice.

Even.—See *MAKE EVEN*.

Even Headline.—The headline of an even page; the compositor, in setting it, placing the folio at the near end of the stick.

Even Page. A page whose folio consists of some even number. It always stands at the left hand on opening a book.

Exclamation (Sign of).—See *ADMIRATION (SIGN OF)*.

F.

Face of the Letter.—The surface of the letter-extremity of the type.

Face of the Page.—The upper side of the page, from which the impression is taken.

Falling out.—A term generally applied to a page, a quarter, or whole forme, which drops away from the chase, through the shrinking of the wooden furniture and quoins. This accident can hardly occur without gross carelessness, if metal furniture and iron sidesticks are used.

Fanning out. A term used in the warehouse in counting work. By taking hold of the right-hand lower corner of the paper between the forefinger and thumb, and by a peculiar turn of the wrist (spreading out the upper part of the paper somewhat in the resemblance of a fan) the sheets can be counted with the greatest facility.

Fat.—With compositors, is light, open matter, and short or blank pages. With pressmen, light formes, woodcuts, and short numbers for which a token is charged. On Chancery Bills, for instance, where the number to be printed is frequently only a dozen or twenty-five copies, the pressman charges the same as though he had pulled 250 sheets of each forme.

Fat-face Letter.—Letter with a broad, black face, and thick stem.

Feet of a Press.—That part of the press upon which the staple is fixed.

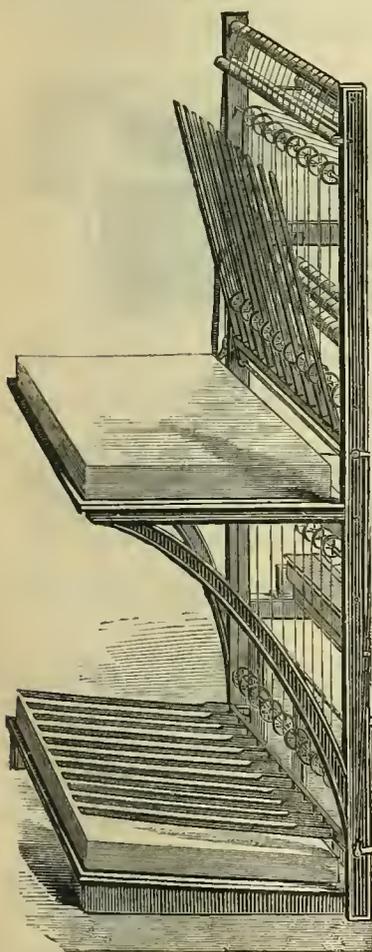
First Forme.—The forme with which the white paper is printed; usually the inner forme of a sheet.

First Page.—The commencement of a book, or the first page of a sheet or signature.

First Proof. A proof pulled immediately after matter is composed, for the purpose of comparing it with the copy. It may either be pulled in galleys or after it is made up into pages and imposed.

Floor Pie.—Types that have been dropped upon the floor during the operations of composition or distribution. A careful compositor will pick up each type as he drops it, and thus prevent its being battered by being trodden upon. It is the duty of the person sweeping the composing-room, before watering it, to pick up the floor-pie in each frame separately, and place it, wrapped in paper, in the thick-space box of the case in use by the compositor occupying that frame, who should clear it away every morning before commencing work. Types that are picked up around the imposing-stone and other parts of the room are called "House Pie," and should be cleared away at once either by the quoin-drawer overseer or by the compositors generally in turns.

Flowers.—Ornaments for making borders to jobs, cards, pages, and wrappers, and for embellishing chapter headings, or forming tail-pieces to books. It is a typefounder's phrase for what printers usually term Borders. In the early days of the typographic art borders were chiefly composed of floral designs; whereas at the present time they assume a variety of shapes, some of which are truly artistic.



Fly.—A man or boy who takes off the sheet from the tympan as the pressman turns it up. This is seldom the case now, as when great expedition is required, the forme is usually laid on a machine.

Flyers.—An invention for taking off or delivering the sheets from a printing machine. Acting automatically, they supersede the necessity of one or more "takers-off." The annexed illustration shows the form of one description of flyer. The paper, coming over the tapes, running round the small set of upper wheels falls down to the lower set of wheels, but in front of the flyers, which form a kind of great comb. The latter work on a rod axis, and alternately assume a perpendicular and horizontal situation, as shown in the upper and lower drawing respectively. The sheets cling to the flyers while they are in the process of falling, and when they are horizontal, they are laid regularly in a heap ready to be taken away. Nearly all the superior class of machines are now furnished with sets of flyers, as they effect such an important saving of labour.

Fly-leaf.—The second or back leaf of an 8vo. or 4to circular. When single page circulars are given to the pressman to work, it is usual for him to ask if it is to be "fly-leaf" or "single."

Fly-sheet.—A description of handbill or two or four-page tract. In some small towns, where it will not pay to work a late edition of a newspaper, a slip is printed with the latest intelligence, and issued as a fly-leaf.

Fly the Frisket.—To turn down the frisket and tympan by the same motion. This should always be done, as it saves time, on ordinary work; but not when very superior heavy or dry paper is used.

Folder.—A narrow slip of bevelled ivory or bone, which the bookfolder draws along each fold of a sheet, to compress it. It is also used as a paper-knife.

Folding.—Doubling the printed sheets so that the pages fall consecutively, and exactly opposite to each other, preparatory to binding.

Folding Machine.—In order to perform the operation of folding sheets, either of bookwork or newspapers, machinery is now specially manufactured which completely supersedes manual labour. The sheets are fed in as in a printing machine, and are delivered, folded, at the bottom. In the use of a newspaper-folding machine at least three-fourths of the expense of hand-folding is saved, and the work is done at the same time in a very superior manner. Several folding machines are now in use, requiring the services of only a single operator to fold in any desired form from 2,500 to 3,500 per hour. They are always reliable, and ready to operate, entirely avoiding the annoyances or inconveniences arising from sickness, scarcity of help, &c., which are inseparably connected with the old system of folding by hand. The sheets are improved in appearance by passing through the machine, the results being to some extent similar to that produced by an hydraulic or screw press.

Folio.—The running number of the pages of a work. When there is no running title or head-line, the folio is placed in the centre of the page; when there is a running title, at the outside corner—the even folio on the left, the odd on the right. The preface, contents, index, and all introductory matter, usually have separate folios inserted in Roman lower-case numerals.

Folio Page.—A page which occupies the half of a full sheet of paper, as Post-folio, Demy-folio, &c. Two pages of folio are imposed together as one forme, four pages being a perfect sheet. Post-folio and Foolscap-folio, however, are more frequently imposed as four-page formes, and printed on Double-Pest and Double-Foolscap paper.

Follow.—That is, see if it follows. This term is used by readers, compositors, and pressmen. By a reader or compositor when he ascertains that the first line of a page or sheet agrees with the last line immediately preceding it, and that the folios numerically succeed each other. On newspapers—particularly daily—it is generally used by compositors when taking up copy of the Parliamentary reporters. They call out for the preceding folio to what they have in hand; and, when answered, say, "I follow you." The pressman merely ascertains that the first page of the inner forme follows the first page of the outer, or whether in working half-sheets he has turned his heap correctly.

Foolscap.—The name given to a size of paper, used principally for Chancery Bills and account-books.—See DIMENSIONS OF PAPER.

Foolscap-folio.—A page or sheet of paper half the size of Foolscap.

Foot of a Page.—The bottom of a page.

Foot of the Letter.—The bottom of the type.

Footstick.—A piece of furniture, sloped or bevelled from one end to the other, placed against the foot of the page. The slope allows the wedge-shaped quoins to be driven hard in between the footstick and the chase, and so secures, or locks-up, the forme or page.

Fore-edge.—The outer edge of a sheet of paper when folded to the proper size of a book.

Forme.—Matter duly imposed and locked up in a chase.

Forme dances.—When, a forme being locked-up on the imposing surface, any of the lines are not properly justified, or letters have slipped at the ends of lines, or when a letter, space, or quadrat of a deeper body is by accident made use of, the forme will not lift properly. To ascertain this, the com-

positor raises the forme slightly and quickly two or three times, when if any of the above irregularities have occurred, he will hear a clicking sound near the imperfect justification, caused by the loose types dancing on the "stone." Pressmen use the same term when a new roller finds out any loose lines in the forme, and causes the types, as some say, to "chatter."

Forme lifts.—When, on being raised from the stone or press, nothing drops out.

Forty-eightmo.—A sheet of paper folded into forty-eight leaves, or ninety-six pages.

Foul Proof.—A dirty proof, a proof with many errors or corrections marked in it.

Foul Stone.—An imposing stone or table which the compositor has not cleared after working at it. In well-regulated offices, fines are inflicted for this neglect.

Founders' Measurement.—Founders agree, with one exception, that the Pica shall be one-sixth of an inch; that two Nonpareils shall be equal to one Pica, two Pearls to one Long Primer, two Diamonds to a Bourgeois; but beyond this there is no relation between one body and another, and each founder differs from his fellows in the exact size even of the types called by the names themselves. In France, this state of things no longer exists. By common consent of the printers, a definite standard has been adopted, and the founders are obliged to conform to the rules laid down, so that from whatever source it may be obtained, the type of a given body is of uniform dimensions. In 1730, Fournier adopted the plan which is the basis of that which now universally prevails. He took two inches as his standard measure, which he called his prototype, and divided these into twelve parts, which he called lines, and each of these again into twelve parts which he named points—thus forming one hundred and forty-four divisions. He assigned to each body a definite number of points. Thus, the body Cicero, corresponding to our Pica, was twelve points, and it was rendered exactly of these dimensions by laying twelve Cicero types on the two-inch standard, and dressing them till they exactly fitted the required space. Leads were made to a given number of points, and thus any body worked with any other without justification. Fournier's standard is still used in the *Imprimerie Impériale*, but it was modified by Didot, who adopted as his prototype, or typometer, as it has since been called, a definite portion of the metre, and thus brought typefounders under the French decimal system.—*Condensed from a valuable article, contributed to Straker's "Printing and its Accessories," by Mr. Shanks, of the Patent Type Founding Company.*

Fount.—A certain weight of letter cast at one time, of the same face and body, and when complete containing due proportions of capitals, small capitals, lower-case, figures, points, four kinds of spaces, quadrats, and accents.

Fount Cases.—Very capacious cases, to hold the surplus sorts of large founts.

Fractions.—A fraction is a part of a unit, written with two figures, with a line between them, thus— $\frac{1}{2}$, $\frac{1}{3}$, &c. The upper figure is called the numerator, the lower one the denominator. Some fractions are cast in one piece, and the following are those frequently used:—

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{1}{4}$ $\frac{3}{4}$ $\frac{1}{8}$ $\frac{3}{8}$ $\frac{5}{8}$ $\frac{7}{8}$

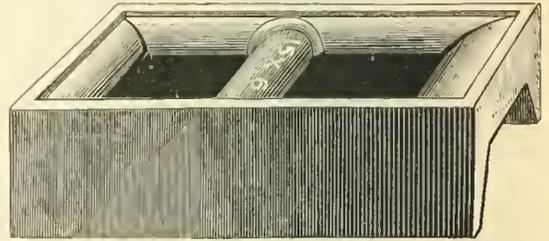
Fractions are also cast in two pieces, called split fractions, by means of which the denominators may be extended to any amount. The separatrix, or rule between the figures, was formerly joined to the foot of the first, but is now attached to the head of the denominators.

Fragments.—Any pages left after the last sheet of a work, and imposed with the title, contents, or any other odd pages, to save press and warehouse work.

Frame.—A stand generally made of some kind of light wood, on which cases are placed in a sloping position to be composed from. The upper ease is placed at a greater angle than the lower, to bring the top rows of boxes nearer to the

compositor. Half-frames are those which are constructed to hold one pair of cases only; three-quarter frames hold one pair of cases, and are fitted with racks for reserve cases; whole frames hold two pairs of cases, and generally contain a rack for five pairs of cases. The remaining space may either be used as a cupboard for the compositors' food and clothes, or drawers for copy, proofs, &c. In newspaper offices a double rack to hold twenty slip galleys usually occupies the space. Sliding trays for jobbing type, initial or titling letters, could also be placed there, or a mere shelf. A very useful frame is also made, about one-third the size of a whole frame, with a rack for ten half-cases similar to one side of an upper ease, and grooves for two more on the top, in which can be kept at least a dozen fancy jobbing founts, or a series of titling letters. Being only about twenty-two inches wide, they can be made available for filling up a spare corner, and thus economise space.—*See HALF-CASE.*

French Furniture.—Pieces of metal cast to Pica ems in length and width, and used, in imposing a forme, for furnishing the chase with the proper margins for books; they are useful in filling up blanks and short pages, and for all other purposes for which wood furniture can be employed. Each piece is cast with the number indicating its dimensions, as seen in the accompanying sketch:—



From the great care and nicety shown in casting the various sizes, this kind of furniture is invaluable for making up blank tabular forms.

French Rules.—Ornamental rules, swelling in the centre, and tapering to a fine line at each end, thus:—

They are generally used to separate chapters in books, and sub-headings from the general headings in newspapers. They are sometimes also called "swell" and "diamond" rules. Various sizes are made, some being cut in brass, and others cast in type metal.

Friars.—Light patches caused by the roller not inking the forme properly; they are caused generally by the inattention of the workman who is rolling.

Frisket.—A thin iron frame, covered with stout paper, and attached to the head of the tympan by a joint. Spaces corresponding to the parts of a forme that are to be printed, are cut out of the paper covering, and the frisket being turned down upon the sheet on the tympan, keeps it flat, prevents the margin being soiled, and raises it from the forme after it receives the impression.

Frisket Pins.—Iron pins passing through the frisket joints, and connecting it with the tympan.

Frisket Stay.—A slight piece of wood fixed to support the frisket when turned up. A "Gallows" was the term formerly used when the old wood press was in use, but it held up the tympan, not the frisket.

Fudge.—To execute work without the proper materials, or finish it in a bungling or unworkmanlike manner.

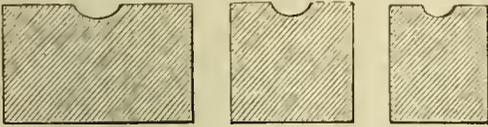
Full Case.—A case completely filled with letters and spaces—wanting no sorts.

Full Forme.—A forme with few blanks or short pages.

Full Page.—A page containing its full complement of lines, or with few or no breaks in it.

Full Press.—When two pressmen are employed upon a forme, one rolling, the other pulling, they are said to be working at full press.—See HALF PRESS.

Furniture.—Pieces of wood used in whiting-out blank and short pages or jobs, and, in imposition, for the margins of books. In imposing a single-page job, it is usual to dress two sides of the chase with furniture, for the head and one side of the page to rest against; the other parts being guarded by the side and foot-sticks. Furniture is manufactured and sold in yard lengths by the dozen, having a groove run along the uppermost edge, as seen in the annexed diagram:—



Six sizes are generally used, the names and breadth of which are as follows:—

Narrow	3 Pica ems	Double Narrow	6 Pica ems
Broad	4 ”	Broad and Narrow	7 ”
Gutter	5 ”	Double Broad	8 ”

Metal furniture is cast as wide as ten Pica ems. See FRENCH FURNITURE. Side and Footsticks, Reglet, and Quoins, are all classed as Furniture, and are described under their respective heads. All furniture should be made to full quadrat height, but a great deal of common, cheap stuff is hawked about the trade which is so low as to be scarcely capable of supporting the matter fairly on its feet, and by using such it is impossible to obtain a good impression.

Furniture Gauge.—See GAUGE.

G.

Galley.—A thin, moveable frame or tray of wood, brass, or zinc, on which to empty matter from the composing-stick as it is set up, and to afford a level surface for making up pages. Gallies are made of different shapes, according to the class of



Fig. 1.

matter they are intended to contain. Fig. 1 is a newspaper column galley, and has a metal bottom, about the thickness of a Pearl. Matter emptied upon it only requires to be fastened up with a sidestick and quoins, and it may be placed under the



Fig. 2.

galley press, and a proof pulled, without the necessity of tying up and removing the type. Quarto and folio jobbing gallies are similarly made. Fig. 2 is a folio jobbing galley, made en-

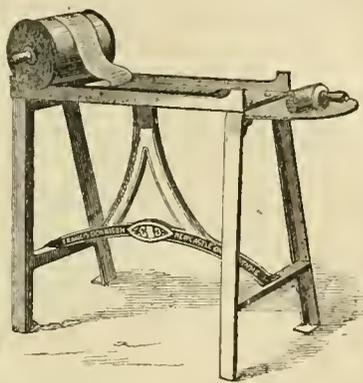


Fig. 3.

tirely of wood; and Fig. 3 is a mahogany slip galley, which is generally used for bookwork, such matter being invariably

made up into pages, and imposed, previous to the first proof being pulled.

Galley Press.—A press for obtaining proofs from matter locked-up in gallies. Presses of this description are found in all newspaper offices, and in most bookwork houses, as they enable proofs to be pulled in the most expeditious manner in slips, and prevent the straining of a large press which is caused by a long narrow column of matter being impressed under a broad platen. In the ordinary galley press in general use the impression is given by a long, narrow platen, to which is affixed a blanket, the platen being made to rise and fall by means of a long lever handle. At the right-hand is fixed an



ink-table, and a hook to hang the roller on. Underneath is a shelf for damp paper. The accompanying engraving shows a new style of galley press, just brought out by Messrs. Francis Donnison and Son, the advantages of which are, the small cost in comparison to the others, and economy of time in pulling a proof; when the type is inked and the sheet laid on, it is only necessary to roll the iron cylinder (which runs easily on a kind of tram) over it, and the impression is complete.

Galley Rack.—A rack made with runners, similarly to a ease rack, in which matter on metal gallies is placed after a proof has been taken from it.

Galley Roller.—A roller about five or six inches long, used at the galley press.

Gallows.—See FRISKET STAY.

Gathering.—A term used in the warehouse when collecting the sheets of a work in orderly succession for delivery to the bookbinder.

Gathering Table.—A long table on which printed sheets are laid, in the order of their signatures, to be gathered into perfect books.

Gauge.—A piece of reglet on which the length of a page is marked, for the compositor to make up by. Clickers, in addition, use gauges showing the length of one hundred lines of any type in use by his companionship, and its divisions in tens. It is a ready mode of ascertaining the number of each taking of copy as he makes it up, and saves a deal of time in counting them. When the quoin-drawer overseer has made up the furniture for the first sheet of a work, he takes a card and cuts it to the size of the heads, backs, and gutters, marking it accordingly, so that the margins of all succeeding sheets may be made the same. This is termed a Furniture Gauge. Card furniture gauges serve very well for small volumes, but for long works and periodicals it is better to use pieces of four-to-pica lead cut to the sizes, and kept together by boring holes through them with a bodkin, so that a cord may be passed through them; card wears away quickly by repeated use, and becomes untrue.

General Bill.—The bill of the whole of the companionship. See COMPANIONSHIP.

Geometrical Signs.—See SIGNS.

Gets in.—A term used when more is got into a line, page, or forme than is in the printed copy a compositor sets from; or when MS. copy does not make so much as was calculated.

Girths.—Thongs of leather, or bands of stout webbing attached to the rounce, and used to run the carriage of the press in or out.

Giving out Paper.—Delivering paper for any job or sheet of a work to the pressman or "wetter" (g.r.).

Giving out Paper and Cards. The following Table shows the quantity of Paper or Cards required for any job of which from 50 to 10,000 copies are ordered. The *quire* consists

of 24 sheets; the *pack* of 52 cards. No allowance is made for waste or "overs." (This table can be obtained separately, printed on a card, price 3d., at 3, Bouverie-street, London, E.C.)

Number required.	2		4		6		8		12		16		18		24		32		36		48		Cards.	
	on sheet		on sheet		on sheet		on sheet		on sheet		on sheet		on sheet		on sheet		on sheet		on sheet		on sheet		Packs.	Cards.
	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Quires.	Sheets.	Packs.	Cards.
50	1	1	0	13	0	9	0	7	0	5	0	4	0	3	0	3	0	2	0	2	0	2	0	50
100	2	2	1	1	0	17	0	13	0	9	0	7	0	6	0	5	0	4	0	3	0	3	1	48
200	4	4	2	2	1	10	1	1	0	17	0	13	0	12	0	9	0	7	0	6	0	5	3	44
250	5	5	2	15	1	18	1	8	0	21	0	16	0	14	0	11	0	8	0	7	0	6	4	42
300	6	6	3	3	2	2	1	11	1	1	0	19	0	17	0	13	0	10	0	9	0	7	5	40
400	8	8	4	4	2	19	2	2	1	10	1	1	0	23	0	17	0	13	0	12	0	9	7	36
500	10	10	5	5	3	12	2	15	1	18	1	8	1	4	0	21	0	16	0	11	0	11	9	32
600	12	12	6	6	4	4	3	3	2	2	1	14	1	10	1	1	0	19	0	17	0	13	11	28
700	14	14	7	7	4	21	3	16	2	11	1	20	1	15	1	6	0	22	0	20	0	15	13	24
750	15	15	7	20	5	5	3	22	2	15	1	23	1	18	1	8	1	0	0	21	0	16	14	22
800	16	16	8	8	5	14	4	4	2	19	2	2	1	21	1	10	1	1	0	23	0	17	15	20
900	18	18	9	9	6	6	4	17	3	3	2	9	2	2	1	14	1	5	1	1	0	19	17	16
1000	20	20	10	10	6	23	5	5	3	12	2	15	2	8	1	18	1	8	1	4	0	21	19	12
1250	26	1	13	1	8	17	6	13	4	9	3	7	2	22	2	5	1	16	1	11	1	3	24	2
1500	31	6	15	15	10	10	7	20	5	5	3	22	3	12	2	15	1	23	1	18	1	8	28	44
1750	36	11	18	6	12	4	9	3	6	2	4	14	4	2	3	1	2	8	2	1	1	13	33	34
2000	41	16	20	20	13	22	10	10	6	23	5	5	4	16	3	12	2	15	2	8	1	18	38	24
2500	52	2	26	1	17	10	13	1	8	17	6	13	5	20	4	9	3	7	2	22	2	5	48	4
3000	62	12	31	6	20	20	15	15	10	10	7	20	6	23	5	5	3	22	3	12	2	15	57	36
4000	83	8	41	16	27	19	20	20	13	22	10	10	9	7	6	23	5	5	4	16	3	12	76	48
5000	104	4	52	2	34	18	26	1	17	9	13	1	11	14	8	17	6	13	5	19	4	9	96	8
10000	208	8	104	4	69	11	52	2	34	18	26	1	23	4	17	9	13	1	11	14	8	17	192	16

Glazing Machine.—A machine used for putting a polished surface on printed papers or for burnishing gold and colour work. It consists of two massive iron cylinders turned by a cog and fly-wheel, with power gear to increase the pressure. The sheets to be glazed are placed between polished copper plates, and so passed between the cylinders.

Gold Composition.—A mixture of chrome and varnish, with which a forme intended for bronze work is rolled previously to being dusted over the impression. In fact, the process is similar to the directions given for Dusting Colours (*q.v.*). The chrome is well ground with a muller into the varnish, which gives the bronze a fuller tint—especially gold bronze—than if the forme were rolled with the plain varnish only. This composition serves equally as well for copper, citron or emerald bronzes. Some printers use ordinary black ink for silver bronze, as it gives it a deeper appearance. Gold size is the name given by some to this preparation. For bronze printing, the roller should have a firm face, or the tenacity of the preparation may destroy it; yet it must have sufficient elasticity to deposit the preparation freely and cleanly on the type.

Good Colour.—When a sheet is printed neither too light nor too dark.

Good Matter.—When a compositor, for temporary convenience, places matter which he has just set up on a galley or board containing distribution, he marks against it, in chalk, the words, "Good Matter," to prevent its being cleared away by any one else by mistake.

Good Work.—Light, easy copy, well paid; or work turned out cleanly and correctly by the printers.

Gothic.—The name of a bold jobbing fount, now but very seldom used.

Graphotype.—A mechanical method of converting an artist's drawing into an engraved block ready for the printer, which is

at once simple, speedy, and comparatively inexpensive. The process was discovered by Mr. De Witt C. Hitchcock, an artist and wood engraver, in New York. Requiring one day to correct a drawing upon boxwood with white, and having none of that pigment ready at hand, he bethought him to make use of the enamel of a common card. On removing this enamel, which he did with a wet brush, he found, to his surprise, that the printed characters on the card remained in relief, the ink used in impressing them resisting the action of the water, and so protecting the enamel lying underneath. The possible practical application of this at once suggested itself to him, and accordingly he began to make experiments. Ultimately he demonstrated that the process of producing relief plates direct from the drawings of the artist is as certain in its results as wood-engraving, with these special advantages; that it occupies at the very most one-tenth of the time, is less costly, and reproduces exactly, line for line, and touch for touch, the artist's own work. The process itself may be thus briefly described:—Upon a sheet of metal perfectly flat is distributed an even layer of very finely pulverized chalk, upon which is laid an ordinary steel plate, such as is used by steel engravers: it is then placed in a powerful hydraulic press, where it is submitted to such pressure that on removal the chalk is found to have assumed a solid, compact mass, with a surface equal to an enamel card, and which is rendered still more solid by a strong coating of a peculiar size. When dried the plate is ready to be drawn upon, and this is done with a chemical ink composed principally of lump black, gluten, and a chemical which gives the fluid the advantage of never drying until it comes in contact with the chalk plate. When the drawing is finished, instead of spending hours, as would have been the case had the drawing been made upon wood, in carefully picking out every particle of white, brushes are used of various degrees of stiffness, which by hand, and in some cases by machine, are caused to revolve on the surface, and in a very short time all the chalk untouched by the artist is removed, leaving the ink lines standing up in clear, sharp relief. All that

now remains to be done, is to saturate what is left upon the plate with a solution which renders all as hard as marble, and it is then ready for the stereotyper or the electrotyper, who, by the ordinary methods, produces a metal block from it, of which impressions may be taken to an unlimited extent. Graphotype has already been applied to book, newspaper, and magazine illustration; to the reproduction of coloured drawings and paintings; to printing for transferring to pottery and japanned surfaces, &c. A company has been formed in London for carrying out this invention. They sell plates of certain sizes, on which the artist can make his drawing; he then returns his work, and the company completes the process, and in a short time produce a block ready for printing. Several publications are now issued which are illustrated on the Graphotype principle, but they are not at all first-class productions. Indeed, it may be said that every substitute for the wood-engraving has failed so far. The man who could hit upon an invention for making a drawing on wood which could be printed, with ordinary type, without the tedious and expensive process of engraving, would make his fortune in a month. A full description of the Graphotype process will be found in "The Handbook of Graphotype; a Practical Guide for Artists and Amateurs." London: The Graphotyping Company (Limited), 7, Garrick-street.

Grass-hands.—On newspapers, in addition to the regular staff of compositors, it is frequently—in fact, almost always—necessary to employ some extra assistance in getting out the paper. Persons so engaged are technically called "grass-hands," and take their chance whether they earn little or much, or anything at all, as they are only called upon to do such work as the regular hands are unable to accomplish. During the parliamentary season, for instance, grass-hands find more employment, as the copy comes in late, and the printer has to divide it, in small fragments, among a large number of compositors. Many compositors earn a good income by *grassing*, and it is a frequent occurrence for a casual grass-hand to take more wages than a regular book-hand; but the period of labour of the former is very precarious, and oftentimes extends into the small hours of the morning, thereby tending to injure his health and interfere with his domestic comfort; whilst the latter, in a general way, knows exactly the hours he is required to work, and has the additional advantage of being able to make arrangements, after those hours, either for pleasure or private business.

Grave Accent.—See ACCENTS.

Graver.—A tool used by wood-engravers. There are three breadths usually employed.

Great Primer.—A type a size smaller than Paragon, and larger than English. There are 51½ lines to the foot.

Grey.—In working at press, when the person rolling has neglected to take colour or distribute his roller properly, and the impression appears very light, the man at the bar tells him to "Take more *butter* (ink), *pardner*; it's getting very grey."

Gripper Machines.—Machines in which grippers, as contradistinguished from tapes, are used.

Grippers.—The brass claws of a printing machine which seize hold of the sheet of paper as it lays on the feeding-board and hold it while it receives the impression under the cylinder. They finally release it in order that the delivery apparatus may remove it from the machinery.

Groove.—An indentation on the upper surface of the short cross of a chase, to receive the spurs of the points and to allow them to make holes in the paper without being themselves injured.

Grotesque.—The name of a peculiar fancy jobbing type, of which the following is a specimen:—

BREVIER GROTESQUE.

Guillotine Cutting Machine.—This machine is of iron, with an iron or mahogany table on which to place the paper to be cut. A moveable gauge is attached to a slide, which runs in

a graduated scale by which the size to be cut can be regulated to the sixteenth part of an inch. When the paper is in its place it is held immovable by a platen and screw; a cog-wheel which moves in a ratchet attached to a large knife is turned, and the knife descends, cutting through the paper with great rapidity. The wheel is then reversed in its motion, and the knife ascends preparatory to a fresh cut.

Gull.—To tear the point holes in a sheet of paper while printing. This is generally caused by the end of the spur being turned, and may be remedied by filing it to a tapering point. At times a gull is caused by the points not falling fairly in the centre of the groove. The paper being too wet sometimes causes the point-holes to tear; and the frisket being raised sharply in heavy jobs, or when the forme has a tendency to "lug," has the same effect.

Gutters.—The furniture separating two adjoining pages in a chase; as between folios 1 and 8 in a half-sheet of 8vo.

H.

Hair Space.—The thinnest of the spaces. On an average ten hair spaces equal one em, but occasionally they are made thicker, and sometimes thinner than this, according to the body of the fount. There are seldom less than seven or more than ten hair spaces to the em.

Half-Case.—A case whose width is about half that of an ordinary upper case. The space between the uprights of a whole frame is usually equal to the breadth of one and a half cases. If a rack be fitted up within it there remains a certain space unoccupied, and this is sometimes filled by a board or galley rack, or left vacant, with only a shelf at the bottom. Half-cases are made in order to utilise this space, and by fixing up a small rack for them, about ten may be conveniently accommodated. They are exceedingly useful for holding titling letters or fancy founts. They contain forty-nine boxes.

Half-Frame.—A frame adapted to hold not more than one pair of cases without a rack.

Half-Machine.—This is a term which has come into use since the small jobbing machines were invented. A person is said to work "half-machine" when he works the treadle, takes off and feeds at the same time.

Half-Press.—When one man both rolls and pulls, he is said to work "half-press."

Half-sheet.—When a forme is imposed in such a manner as to perfect itself, it is called a half-sheet.

Half-Title.—An epitome of the full title, which is placed in the centre of the preceding odd page to prevent the full title being worked as a single leaf. It is also placed at the head of the opening page of the text of a book. It should be set in the neatest and simplest manner possible, and should the matter extend to three or more lines it should, if possible, be displayed in a similar style to the title-page, but in rather smaller type. The space occupied by the half-title will vary according to the width of margin in the succeeding pages, the size of the page, and the openness or closeness of the lines of the text. The degree of taste possessed by the compositor is invariably shown by the appearance of the title and half-title. The latter is sometimes called a "bastard title."

Handbills.—A branch of job work. They are small bills intended for circulation by hand, as distinguished from placards, which are intended for display on walls. Any variety of type is permissible in a handbill, except the most ornate and complicated letters, which are not easily read, and are therefore unsuitable for this class of work. There is this difference between a handbill and a circular: in the latter the sizes of the types in the different lines should be duly proportioned to each other, according to the importance of the words, and the whole should possess a certain harmony of appearance, both in regard to the character of the founts employed and the thickness of the strokes

of the letters. But in a handbill a few lines may be "thrown up" out of all proportion to the rest, and their comparative importance may thus be advantageously exaggerated. The object of this is, that on a casual glance the reader may be at once struck with the novelty, usefulness, necessity, or advantage of the thing or occasion thus advertised. Handbills are now required in such large numbers, at so short notice, and at so low a cost, that it is seldom remunerative to print them at a hand-press. When very long numbers of such jobs are ordered, one forme is set-up, stereotypes taken, and a large sheetful worked at a machine.

Handle of a Press.—The extremity of the bar. The handle is usually a wooden cylinder clothing the bar, so that the latter may be more conveniently pulled back. See PRESSSES.

Hand-Mould.—In typefounding, this name is given to a small instrument or frame into which the matrix is fixed. The mould is composed of two parts. The external surface is of wood, the internal of polished steel. At the top is a shelving orifice, into which the metal is poured. The space within is set according to the required body of the letter, and is made exceedingly true. The melted metal, being poured into this space, sinks to the bottom into the matrix, and instantly cooling, the mould is opened, and the type is cast out by the workman. Formerly types were cast exclusively by this process; but the art has recently been gradually improved, and machinery has to a certain extent superseded the hand-mould. See TYPE-FOUNDING.

Hand-Press.—A press which is worked by hand, in contradistinction to one which works automatically by machinery. It is usual to call the first a press, and the latter a machine, although in strictness both are machines and both are presses. In the hand-press the turning down the tympan, running in the carriage, effecting the impression, bringing back the carriage, and raising the tympan again, are performed by manual labour; whereas in a "machine" they are performed by certain arrangements of bands and wheels.

Hanging Galley.—A small galley with hooks fastened at the back in such a way that when it is hung on the boxes of the upper case it will rest in a sloping position. These galleys are found very handy for heads, whites, or standing lines, and Italic or fancy sorts turned out in distribution; and is far preferable to the slovenly habit many compositors have of dropping Italic words into the bottom boxes of the upper-case, and more often than not forgetting to distribute them into their proper case, until the Italic runs short, when they resort to the back boxes to pick out the deficient letters, wasting more time in hunting over the pie for these two or three types than would have sufficed to have cleared away the whole in a proper manner.

Hanging Indentation.—When the first line is brought full out to the commencement of the measure, and the second and following lines have a certain indentation, the former "hangs over," and the arrangement is called by some a "hanging indentation;" but among compositors the term used is "run out and indent."

Hanging Pages.—Pages of type which are found, after being locked-up, to be out of the perpendicular. The remedy for this is, to unlock the quarter in which it is imposed, and to pat the face of the type with the fingers of one hand, at the same time pushing up the page with the other, until it is got into a proper position again. Sometimes the hanging of a page is caused by the page at its side being rather longer, or by the footstick binding against the furniture in the "backs;" in this case, an extra lead or piece of reglet should be placed at the foot of the page before re-locking-up, so as to be clear of the obstacle. When a forme is unlocked, care should be taken not to leave the quoins too slack, as the operation of loosening the others may either squabble the matter or cause it to hang.

Hang up.—To place the printed sheets upon the drying poles or lines of the warehouse. To do this the warehouseman should take a peel in his right hand (some use the left hand), and lay the head of it flat upon the heap to be hung up; he

should then turn over on it from six to a dozen sheets, according to the thickness of the paper and the nature of the work, taking care to have the fold in the centre of the short cross, as if it falls across any of the newly-printed pages, they will most likely smear and set-off. Having folded these sheets down, on one end of the peel-head, he must clutch them with his left hand, and lift the sheets and the peel together two or three inches to the right, take another fold, then shift it, and so on till he has as many folds as he can conveniently lift with the peel. Then raising the sheets above the poles or lines on which the sheets are to be hung, and sloping the handle of the peel, the folds will open at the under side, and they may be lowered and hung up. The peel must now be withdrawn from the centre, and be inserted between the first and second folds or lifts, leaving the first lot hanging on the pole. The other portion must then be shifted to the left, so that the second fold shall just overlap the first; and so on till all are spread out. The process is now repeated till the whole heap is hung up.

Hard Impression.—When there is too much pull on the press, and lines which should be soft and delicate come up heavy and strong. Sometimes it is caused by having too soft a blanket inside the tympan.

Headings.—A peculiar branch of jobbing work, *i.e.*, the setting of words to work in the heads of ruled columns of ledgers, day-books, time-books, &c. The compositor in setting them up does not generally use a stick, but picks up the words in his fingers, and lays them along the bottom ridge of a long galley, to which he affixes the sheet, and spaces out the words so as to fall into their proper positions. The pressman, in working headings, lays his sheets to needles, placed in the tympan, so as to point to a particular line; for in ruling, some sheets may be a trifle out in the margin, although the lines will be exact; and by laying to the same line at each impression, the headings are bound to fall right.

Headline.—The top line of a page containing the running title and folio. When there is no running title the folio is styled the head-line. Chapter lines are head-lines, as are also the titles of articles in periodicals and newspapers.

Head of a Page.—The top or upper end of the page.

Head-pieces.—Ornamental designs used at the heads or commencements of chapters. The early productions of the press were embellished with beautifully-executed drawings in various colours, done by hand, and displaying the highest skill of the illuminators. Gradually, as books were produced more cheaply, wood engravings were used; then metal ornaments were produced, and subsequently flowers or borders. The latter were superseded by simple brass rules, and some years ago even these were dispensed with, and head-pieces were seldom or never seen. The recent revival of old-style printing has brought with it, not only the old faces of type but the old ornamental head-pieces, and many of the newest and most tasteful works are now ornamented with fac-similes of head-pieces that were in fashion two centuries ago.

Heads.—The margin between the heads of the pages in a forme.

Heap.—The pile of paper given out and wetted down for any job.

Hell.—The place where the broken and battered type goes to. Modern refinement has almost expunged this expression from the printers' vocabulary.

High.—A line or letter is said to be "high" when it is above the height of the other letters or lines surrounding it. Owing to the different standards of the foundries, and especially of the wood letter cutters, founts are sometimes found to be almost useless for working in conjunction with founts supplied by other manufacturers.

Hoe's Machines.—A greatly improved series of machines for job, book, and newspaper printing, invented by Richard M.

Hoe, a native of Leicestershire, who emigrated in his youth to the United States. In 1846, he brought out his "Lightning Press," or Type-revolving Printing Machine, which is now in use in some of the largest offices in every part of the world. The forme of type is placed on the surface of a horizontal revolving cylinder, of about four and a half feet in diameter. The forme occupies a segment of only about one-fourth of the surface of the cylinder, and the remainder is used as an ink distributing surface. Around this main cylinder, and parallel with it, are placed smaller impression cylinders, varying in number from four to ten, according to the size of the machine. The large cylinder being put in motion the form of types is carried successively to all the impression cylinders, at each of which a sheet is introduced and receives the impression of the types as the forme passes. Thus as many sheets are printed at each revolution of the main cylinder as there are impression cylinders around it. One person is required at each impression cylinder to supply the sheets of paper, which are taken at the proper moment by fingers or grippers, and after being printed are carried out by tapes and laid in heaps by means of self-acting flyers, thereby dispensing with the hands required in ordinary machines to receive and pile the sheets. The grippers hold the sheet securely, so that the thinnest newspaper may be printed without waste. The ink is contained in a fountain placed beneath the main cylinder, and is conveyed by means of distributing rollers to the distributing surface on the main cylinder. This surface being lower, or less in diameter, than the forme of types, passes by the impression cylinder without touching it. For each impression there are two inking rollers, which receive their supply of ink from the distributing surface of the main cylinder: they rise and ink the forme as it passes under them, after which they again fall to the distributing surface. Each page of the paper is locked-up on a detached segment of the large cylinder (termed a "turtle"), which constitutes its bed and chase. The column rules run parallel with the shaft of the cylinder, and are consequently straight; while the head, cross, and dash rules are in the form of segments of a circle. The column rules are in the form of a wedge, with the thin part directed towards the axis of the cylinder, so as to bind the types securely. These wedge-shaped column rules are held down to the bed by tongues projecting at intervals along their length, which slide in rebated grooves cut crosswise in the face of the bed. The spaces in the grooves between the column rules are accurately fitted with sliding blocks of metal, even with the surface of the bed, the ends of which blocks are cut away underneath to receive a projection on the sides of the tongues of the column rules. The forme of type is locked-up in the bed by means of screws at the foot and sides, by which the type is held as securely as in the ordinary manner upon a flat bed, if not more so. The speed of these machines is limited only by the ability of the feeders to supply the sheets. Messrs. Hoe and Co. possess a very extensive manufactory in New York, and they produce various classes of printing *material*. The most stupendous of their works are the type-revolving lightning presses; but perhaps the most extraordinary are the machines whereby railway and theatre tickets are, at a single operation, printed, numbered in a different colour, and deposited in regular order in a receptacle, at the rate of 10,000 to 12,000 an hour. In 1843, they produced an improved kind, which took the sheet with iron fingers. Rotary Perfecting Presses were made by Hoe and Co. as long ago as 1850, when one was furnished to print, in both type and stereotype, "Thompson's Bank Reporter," and another to print "Webster's Spelling Book" from the plates, at which work it is still employed by Appleton & Co. These machines were the first ever constructed on this principle. In 1860, Hoe & Co. sent to *Lloyd's Weekly Newspaper*, in London, a perfecting machine, adapted to two or more "feeders." Large machines built on this principle are now in use in several newspaper offices, and strenuous exertions are making to improve them to a point where they will do the work of the type-revolving press with equal speed and certainty, and with greater cheapness. Much interest is felt at the present time in perfecting presses, so called because they "perfect" or print both sides of a sheet at once. They are of various patterns, but may all be divided into

two classes, one having flat beds moving horizontally backward and forward, and the other having curved beds revolving upon the surface of a cylinder. Those with flat beds were originally made in England and Germany as early as the close of the last century, and have been manufactured by Hoe & Co. for about forty years.

Hollow Quadrats.—These are cast of various sizes, graduated to Pica ems. They answer many of the purposes of quotations, but are principally useful as frames or miniature chases for circular or oval jobs.

Horn Book.—Horn books, consisting of a single sheet of paper mounted on wood and protected by a transparent sheet of horn were formerly extensively used in the education of children. They were very common in the Elizabethan period, but as they had no dates attached to them it is impossible to give a precise account of their use.

Horse.—The stage on the bank (*g.v.*) on which pressmen set the heap of paper.

Horsing it.—When a compositor or pressman writes more in his weekly bill than he has earned, he is said to be "horsing it."—See DEAD HORSE.

Horseflesh.—When composition is paid for, week after week, "on account"—that is, instead of the exact value of the work done being estimated, a rough approximate sum is charged—there is always a tendency to "overdraw." At the finish of the job and the settling up of accounts, what the printer has to work out is called "horseflesh."

Hydraulic Press.—An improved invention on the principle of the Standing Press (*g.v.*). It is used by printers for pressing their printed work, the pressure being given by means of water instead of the lever-bar, which works the screw. The pumps and tank are fixed at the side of the press, and as they are worked, the piston is forced upwards. Some hydraulics have only one pump; but most of them have two. One pump is used at first, till the piston is raised high enough to cause a pressure, and when this becomes tight the other is applied, which increases the pressure still more. A long handle is then placed in the first pump, which gives greater power still; and when placed on the second pump, two or three persons give their united strength till the required pressure is attained. The sheets are generally allowed to remain in the press all night; but sometimes it is necessary to fill the press twice a-day. To release the sheets, it is only necessary to turn a tap, which lets the water escape back into the tank, and the piston is lowered in proportion as the water runs out. Its descent can be impeded instantly by fastening the tap again.

Hyphen.—This symbol (-) is employed to connect compound words, as *lap-dog, to-morrow*. It is also used at the end of a line when a word is not finished, but part of it is carried into the next line.—See DIVISION OF WORDS.

I.

Illuminated Letters.—The first productions of the printing press contained no capital letters at the commencement of sentences or proper names of men and places. Blanks were left for the titles, initial letters, and other ornaments, in order to have them supplied by the illuminators, whose ingenious art, though in vogue before and at that time, did not long survive the masterly improvements made by the printers in this branch of their art. These ornaments were exquisitely fine and curiously variegated with the most beautiful colours, and even with gold and silver; the margins, likewise, were frequently charged with a variety of figures of saints, birds, beasts, monsters, flowers, &c., which had sometimes relation to the contents of the page, though often none at all. These embellishments were very costly, but for those who could not afford a great price, there were more inferior ornaments which could be done at a much easier rate. The art of illumination has recently been revived, but less as a profession than as an elegant pastime for amateurs of art. Illu-

minated letters, of the most elegant and variegated designs, are now sold by the English typefounders to supersede these costly ornaments.

Illustrated Books.—From Dunlap's "History of the Arts of Design" we learn that the earliest specimens of engraving are of the fifteenth century, and the first artist on record is Martin Schoen, of Culmbach, who died in 1486. The Italians claim the invention; but it is remarkable that the first book printed at Rome had the first engravings executed there, and they were done by two Germans, date 1478. Scriptural designs of many figures were cut with descriptive texts on each block or plate, and they were printed on one side of the paper only, and two prints were frequently pasted together to form one leaf, with a picture on each side; entire sets were subsequently bound up and formed the block-books so well known to antiquaries. Typography was introduced into England by Caxton in 1474, and published his "Game of Chess," "Æsop," and other works with woodcuts, the execution of which is quite barbarous when compared with continental engravings of the same period. All cuts consisted of little more than outlines until 1493, when Michael Wolgemuth effected a great improvement in the art of wood engraving by his cuts for his "Nuremberg Chronicle," in which he introduced a greater degree of shading, and the first attempts at cross-hatching. This was carried to a much higher perfection by his pupil, Albert Durer. The sixteenth century was rich in able wood engravers in several parts of continental Europe. In England, engraving was indebted to foreigners, generally Flemish, Dutch, and German, for existence until the middle of the seventeenth century. Of early English artists one of the most eminent is George Vertue, who died in 1756. The founder of the school of English landscape engraving is Francis Nivares, a Frenchman. However, Woollet, a native of England, was a great engraver of this school, although he did not confine himself to landscapes, as his great work after West's "Death of Wolfe," sufficiently proves. Hogarth, one of the glories of English painting was equally celebrated as an engraver. In the seventeenth century the art of wood-engraving visibly declined, owing to the superior cultivation of copper-engraving; but in the eighteenth century it was revived in England with great success by Bewick, who began the practice of the art in 1768. In 1775, Bewick produced his well-known cut of "The Old Hound," and in 1785 he commenced his natural histories, and published "The Quadrupeds" in 1790, and "Birds" in 1797. These and his other works effected by their great excellence the restoration of an almost lost art, and led to its cultivation and development, and the introduction of a richer and more varied style of workmanship, until the English, who were behind their continental neighbours at the outset, have become pre-eminent in the art.* The Bewick of America was Alexander Anderson, who studied the art of metal engraving with John Roberts. In the year 1764, as a professional engraver, Mr. Anderson was engaged by William Durell, one of the early American publishers, to engrave cuts for an edition of "The Looking Glass," the original engravings for which were cut by Bewick on wood. He worked through half the book in type metal and copper, and then commenced his essays on wood, without other instruction than that derived from studying Bewick's cuts, which he was copying. He persevered in the practice and exhibited real ability, though for many years he received but little encouragement; but, like his great English contemporary, he was an enthusiast in the art, and kept steadily on his course, and had the satisfaction of witnessing the progress of wood-engraving in America to general adoption. In America, as in England, the first illustrated books which aimed at excellence in the art of engraving, and to rank altogether in paper, printing, and binding, as works of art, were in the form of Annuals. In England we have to go back as far as 1822 to find the earliest of the Annuals. In the year 1829, seventeen of these works were published in England; in 1810 there were only nine; and in 1856 the last of the Annuals, "The Keepsake," ceased to

exist. Although the engravings, which were after the best English painters, such as Turner, Landseer, Clarkson, Stanfield, Roberts, Stone, and Callcott, were the main attraction, some of the most distinguished authors were engaged on the letter-press. Sir Walter Scott wrote in one, and received five hundred pounds for four not very long contributions. Coleridge wrote in another; and among lesser names were Dr. Croly, L. E. Landon, Mary Howitt, Mrs. Norton, and the Countess of Blessington. The pioneers on the other side of the Atlantic were "The Token," published in Boston, by S. G. Goodrich, for which Nathaniel Hawthorne wrote his first things, and "The Gift," published by E. L. Carey, afterwards of the firm of Carey & Hart. The art of illustration by engravings passed into a new phase in England about the year 1840, and a little later the same phase in the United States. The art of illustration was cheapened and popularised. The "Pickwick Papers," and other early works of Mr. Charles Dickens, followed by those of Charles Lever, had created a popular taste for picture books. In 1840, "Master Humphrey's Clock" was issued in threepenny weekly numbers with woodcut illustrations by G. Cattermole and H. K. Browne; and at the same time Ainsworth's "Tower of London," in shilling monthly parts, with illustrations by George Cruikshank and W. A. Delamotte. *Punch* was started in 1841, and in 1842 the *Illustrated London News*, and both gave an immense impetus to the taste for pictorial illustrations. The cheap illustrated books and serials of Messrs. Charles Knight and the Brothers W. & R. Chambers, were the forerunners of the mass of the miscellaneous books and periodicals of the present day. In 1869 was started the *Graphic*, which transcends in the excellence of its illustrations any previous achievement either in this or any other country. A magnificent collection of illustrations, showing the rise and progress of the art, is on view at the South Kensington Museum. In arranging it, the object of its originator has been to illustrate the results attained by each of the processes employed, rather than to point attention to the works of any particular masters or schools of art. The series commences with examples of prints from wood or metal blocks, either simple or compound, and of plain as well as coloured impressions obtained by their means, but by a single operation of the printing press. A set of impressions from the blocks cut by Bewick illustrate the degree of perfection to which wood engraving was advanced at the close of the last century, and examples of split prints from the *Illustrated News* show the means which have been employed to aid collectors in completing their series from the pages of periodicals and the literature of our own times. Prints from engraved copper plates follow, and they illustrate the results attained simply by cutting away portions of the surface of the metal plate by the graver; the action of the acids, as applied in the production of etchings; and the results of a combination of etching and engraving, as those arts were practised at the period when Hogarth began his career. Another set illustrates engraving upon steel and lithography. Following the lithographic examples is a large series of prints in carbon obtained by a variety of photographic processes. It is curious to remark that the past, the present, and the future of our producing powers have each been based upon entirely distinct principles. As greater facilities for producing prints have been demanded, a weaker and apparently less durable source of production has been, and appears, in the future, to be likely to be still more resorted to. Thus, in the past period, engravings were executed, and prints obtained from copper and steel plates. At present, wood blocks and lithographic stones are employed; but the future of our art-producing power appears likely to rest on what are apparently still less durable, viz., gums, resins, and gelatine. The series is brought to a close by juxtaposing works of Doo, Cousins, Landseer, and others, engravers of our own times, as published by Mr. Graves, with the series of carbon prints obtained by means of gelatine, as in the photo-galvanographic process of Herr Paul Pretsch; prints in gelatine by Mr. Swan, of Newcastle, the Autotype Company, of London, and Woodbury's process; and prints from gelatine as seen in the examples by M. Tessier du Motay, of Paris, and Herr Albert, of Munich. The collection consists of about 300 examples, and presents a sort of panoramic view of prints and reproductive

* Bewick's Woodcuts, with a descriptive catalogue by the Rev. Thomas Hugo, have recently been published by Reeve & Co., London.

art during the past century and a half, and it is interesting as showing the direction in which we must look in the future. Whatever success may have attended the efforts of various publishing firms to extend the art of wood-engraving, it must be admitted that one firm stands out pre-eminent in the magnitude of its operations in this direction. Messrs. Cassell, Petter, and Galpin may be said to have accomplished the work of bringing high-class and valuable pictorial representations within reach of the people. "Cassell's Illustrated History of England" may be mentioned among the first illustrated works of importance undertaken by the firm. It was richly embellished with wood-engravings to the number of two thousand, by the most eminent English and foreign artists. A careful attention to archaeological research gives inestimable interest to every engraving; and, in fact, pictures out the story of our country's annals so faithfully as to leave an indelible impression on the mind. But a still greater work remained to be done. When, in 1859, the firm undertook the issue of an illustrated edition of the Holy Scriptures, so gigantic an undertaking had never been attempted before. Editions of the Bible with pictures, a very different thing from *illustrations*, had been on several occasions attempted with varying success; but the work projected by Messrs. Cassell, Petter, and Galpin was to comprise the drawings of the best artists, founded on the most reliable sources, involving an immense outlay of capital, and the price of each number was to be One Penny. Artists of the highest eminence, English and foreign, were engaged, and the first number of "Cassell's Illustrated Family Bible" was hailed with universal satisfaction. Its engravings formed an era in the art of wood-engraving. Never before had such drawings been so faithfully rendered by the graver, and never before had woodcuts been so carefully and beautifully printed. Originally designed for the home of the cottager and the parlour of the operative, yet this edition was welcomed by the highest and noblest in the land; and not in this land alone, in America, Australia, and throughout the Colonies, it was alike popular. Then followed the issue of "Cassell's Popular Illustrated Natural History," with about one thousand illustrations. Space will not allow us to further particularise the illustrated works which rapidly followed each other from the press of Messrs. Cassell, Petter, and Galpin; we must confine ourselves to the mere mention of a magnificent Memorial Edition of the works of Shakespeare, in three volumes, containing upwards of five hundred illustrations, produced at a cost of about £20,000, "Cassell's Illustrated Edition of Foxe's Book of Martyrs," "Cassell's Illustrated Penny Readings," "Cassell's Illustrated World of Wonders," "Cassell's Illustrated Swiss Family Robinson." To this array of illustrated standard works we have yet to add the most magnificent series of illustrated volumes ever given to the British public, namely, the masterly Doré series of fine art volumes, the Holy Bible, Milton's "Paradise Lost," Dante's "Inferno," Dante's "Purgatory and Paradise," "Don Quixote," "Atala," "La Fontaine's Fables," "Croquetaine," "Fairy Realm," "Munchausen," and "Wandering Jew," which mark, perhaps, the greatest advance in the progress of wood-engraving and printing, as applied to popular illustrated books, that this country has witnessed.

Imperial.—A size of paper.—See DIMENSIONS OF PAPER.

Imperfections.—When a fount of new type is received from the foundry, it is usually found that some of the sorts are deficient in quantity for the particular work for which the type was required. The sorts wanted are called "imperfections."

Imposing.—The act of locking-up pages in a chase, after it has been properly dressed with furniture. Much attention has been paid to this important branch of the compositor's business in the various technical handbooks, and some ingenuity has been displayed in inventing new and improved modes. Imposing from the centre, by means of which the blank or open pages may be placed in the middle of the forme, leaving the solid pages on the outside to act as bearers for the rollers, as well as for the better regulation of the impression, is generally adopted for sheets of oddments, such as the title, dedication, preface, &c. Mr. Houghton, in his "Printers' Practical Every-day Book" gives several interesting examples of improvement on the old systems of imposition. The "American Printer" says: "All

odd matter for any forme should be divided into fours, eights, twelves, and sixteens, which is the ground-work of all the impositions except the eighteens, which differs from all others; for instance, sixteens, twenty-fours, and thirty-tvos are only octavos and twelves doubled, or twice doubled, and imposed in half-sheets. The sixteens are two octavos imposed on one side of the short cross; the twenty-fours are two twelves imposed on each side of the long cross; and a thirty-two is four octavos imposed in each quarter of the chase. Thus a sheet may be repeatedly doubled. By this division any forme or sheet may be imposed, always bearing in mind that the first page of each class must stand to the left hand, with the foot of the page towards you. Having set down the first page, then trace the remainder according to the scheme which applies to its number, in proof of which the standard rule for all other impositions may be adopted, —namely, the folios of two pages, if placed properly beside each other, will make, when added together, one more than the number of pages in the sheet; that is, in a sheet of sixteen pages, one and sixteen coming together will add up seventeen, and so nine and eight will make seventeen; and so on. In half-sheets, all the pages belonging to the white paper and reiteration are imposed in one chase. So that when a sheet of paper is printed on both sides with the same forme, that sheet is cut in two in the short cross if quarto or octavo, and in the short and long cross, if twelves, and folded as octavo or twelves." For the subsidiary operations of tying-up the pages, laying down pages, making-up furniture, making the margin, locking-up formes, &c., see those subjects in their alphabetical order.

Imposing Surface.—The stone or plate on which formes are imposed and corrected. Formerly imposing surfaces consisted almost exclusively of slabs of stone, chiselled and smoothed on their upper surface. Recently plates of iron have been used instead, their advantages, over even the hardest stones, being their strength and the little danger of breaking them, while they are considerably smoother, and consequently do not injure the bottom of the type which is moved about upon them. The superficial size of a "stone" varies according to the description of formes to be laid on it. Its height should be slightly over three feet. The frame on which the stone rests is usually fitted up with drawers for quoins and furniture, &c. Sometimes it contains a rack for locked-up formes, but this system is a bad one, as the frequent vibration from the locking-up and plaining down of formes on the stone tend to loosen the quoins of those in the rack and cause the matter to fall out. It is around the stone that the workmen assemble while a chapel is being held. —See TRADE CUSTOMS.

Impression.—The art of taking impressions from letters and other characters cast in relief upon several pieces of metal, is called letter-press printing. The impressions are taken either by superficial or surface pressure, as on the common printing press, or by lineal or cylindrical pressure as in the printing machine and roller press. The pigments or inks, of whatever colour, are always upon the surface of the types, and the substances which may be impressed are various. Wood-cuts and copper engravings in relief are also printed in this manner. Copperplate printing is the reverse of the preceding, the characters being engraven in intaglio and the pigment or inks contained within the lines of the engravings, and not upon the surface of the plate. The impressions are always taken by lineal or cylindrical pressure, the substances to be impressed, however, are more limited. All engravings in intaglio, on whatever material, are printed by this method. Lithographic printing is from the surface of certain porous stones, upon which characters are drawn with peculiar pencils or pens, &c. The surface of the stone being wetted, the chemical colouring compound adheres to the drawing and refuses the stone. The impression is taken by a scraper, that rubs violently upon the backs of the substances impressed, which are fewer still in number. Drawings upon zinc and other materials are printed by this process. Cotton and calico printing is from surfaces engraven either in relief or intaglio, but it is a branch of printing which does not enter within the scope of this work.—Having explained the scientific distinctions between the various kinds of impression, the word may be considered in connection with its technical meaning. Amongst the best printers

there exists a great difference of opinion as to the force needed for a *fine* impression. By some a heavy and solid indentation of the paper is considered necessary, while others insist that an impression which does not indent the paper is preferable. The indentation of the paper is no test of the force of the impression. A light impression against a wollen blanket will show more forcibly than a strong impression against a paper or pasteboard tympan. Type is worn out not so much by the direct impression of the platen or cylinder on the flat face of the forme as by a grinding or rounding impression on the edge of the type, caused by forcing of the blanket between the lines and around the corners of every letter. Every fount of worn-out type, whether from cylinder or platen-press, has suffered less from a reduction in height than from a rounding of the edges. When the type is new and the tympan hard and smooth, the impression can be made so flat that the type will not round at the edges, and the impression will not show on the paper. But this cannot be done with old type or with a soft tympan; the impression must be regulated to suit the tympan. On fine work a rounding impression should be avoided, as it not only destroys type, but also thickens the hair lines and wears off the serifs. It is not sufficient that the paper should barely meet the type; there must be sufficient force in the impression to transfer the ink from the type to the paper. If there is not sufficient impression it will be necessary to carry much ink on the rollers, and this produces two evils: the type is clogged with ink and the forme becomes foul; too much ink is transferred to the paper, which smears and sets off for want of sufficient force to fasten it to the paper. Distinction must be made between a light and weak impression, and a firm and even impression. The latter should be secured, even if the paper is indented, though that is not always necessary. A forme of old type, a poster or other solid forme, must have a firm impression, or else a very tedious and careful making ready.

Imprint.—The statement at the end of a book or paper of the name and address of its printer. The Newspapers, Printers, &c., Act (32 & 33 Vic., c. 24), while it repealed many of the then existing penal enactments against printers, left in force the Act 2 & 3 Vic., c. 12, sec. 2, which imposed a penalty upon printers for not printing their name and residence on every paper or book, and on persons publishing the same. The words are:

Every person who shall print any paper or book whatever which shall be meant to be published or dispersed, and who shall not print upon the front of every such paper, if the same shall be printed on one side only, or upon the first or last leaf of every paper or book which shall consist of more than one leaf, in legible characters, his or her name and usual place of abode or business, and every person who shall publish or disperse, or assist in publishing or dispersing, any printed paper or book, on which the name and place of abode of the person printing the same shall not be printed as aforesaid, shall for every copy of such paper so printed by him or her forfeit a sum not more than five pounds.

Another section provides, that in the case of books or papers printed at the University Press of Oxford, or the Pitt Press of Cambridge, the printer, instead of printing his name thereon, shall print the following words: "Printed at the University Press, Oxford," or "The Pitt Press, Cambridge," as the case may be.—*See LAWS RELATING TO PRINTERS.*

Incut Notes.—Notes which *cut into* the matter. They are always placed on the outside edges of the page.

Indentions.—The first line of a new paragraph is usually indented one em, although if the work be set very widely, and with leads between the lines, or if the measure is very wide, two or three ems may be used.—*See HANGING INDENTIONS.*

Index.—An alphabetical table of the contents of a book. The index is generally placed at the end of the volume, and set in letter about two sizes less than that of the work. It is always begun on a right-hand page, unless space is unusually valuable, or the appearance of the work not considered as of consequence. In setting an index the subject line should not be indented, but if the subject make more than one line, all but the first should be indented about an em. Where several index figures are used in succession, a comma is put after each

folio; but to save figures and commas, the succession of the former is noted by putting a dash between the first and last figures thus, 4 8. Again, if an article has been collected from two pages the folio of the second is supplied by *sq.*, or *sequente*, and by *sqq.*, or *sequentibus*, when an article is touched upon in succeeding pages. A full point is not put after the last figures because it is thought that their standing at the end of a line is a sufficient stop. Neither is a comma or a full point placed to the last word of an article in a wide measure and open matter with leaders; but it is not improper to use a comma at the end of every article where the figures are put close to the matter, instead of running them to the end of the line.

Index (☞) or Hand.—A symbol used to point out something which the writer thinks of great importance. Amongst compositors, it is commonly known as a "fist." The index sign is not frequently used in book work, but chiefly in handbills, posters, and direction placards, as, "☞ Note the Address," "☞ To the PRINTERS' REGISTER Office."

Inferior Letters.—Letters which are cast with their face low down on the shank, so that an unusually white space is left at the head when they are printed.

Ink.—Printing ink, as everyone must be aware, is a very different composition to that used for writing. It is a soft, glossy compound, having a certain amount of adhesiveness, and becoming, by exposure in thin layers, perfectly hard and firm. Besides these properties, which always belong to it, it possesses other and various attributes, according to the numerous purposes to which it is applied. Its preparation demands not only a tolerable proportion of scientific knowledge, but also very careful manipulation, and manufacturers have found that to produce it of good quality both experience and deep study are requisite. The very important use for which it is designed—the registering in a permanent form the productions of the mind—indicates some of the properties it ought to possess. The most valuable of these is durability, or the capacity to resist successfully the obliterating influences of time, and it should also have brightness and depth of tint. It must be a mutable preparation, passing from the soft, adhesive state to that of a perfectly hard and dry substance, and this change of condition must have a certain rate of progress, and be, to some extent, under control. When prepared, some time generally elapses before it is used, and during this period it should not alter in the slightest degree; in fact, when the air is excluded from it it should keep for almost any length of time. During its application to the type, its solidification should be as slow as possible, and unaccompanied by the emission of any unpleasant or deleterious odour. It ought not to effect the soft elastic rollers which are employed to convey it to the type, and which, unless the ink be a perfectly harmless preparation, are liable to considerable injury. The change of state should not be accompanied by the deposition of consolidated matter in the ink, as this impedes the pressman and proves a loss to the printer. Printing ink should, moreover, have an oleaginous character; it ought to be very glossy, and perfectly free from any granular appearance. If, on the extraction of a small portion from a mass, it leaves but a short thread suspended, it is considered good, but the best test of its consistency is the adhesion it shows upon pressing the finger against a quantity of it. The requirements of a good printing ink do not end here. Having been applied, its action must be confined to a very slight penetration into the paper—just sufficient to prevent its detachment without materially injuring the surface of the latter. It ought to dry up in a very short space of time to a hard inodorous, unalterable solid. The ingredients of ordinary printing ink are burnt linseed oil, resin, and occasionally soap, with various colouring matters. The best quality of linseed oil is used, and this is purified by digesting it in partially-diluted sulphuric acid for some hours, at a temperature of about two hundred and twelve degrees, allowing the impurities to subside, and then washing away the acid with repeated additions of hot water. The oil, after this treatment, is pale and turbid, and if the freeing from the acid is complete, there is scarcely any odour. By rest, the oil clarifies, and has then a pale lemon colour. It now dries much more rapidly than before. The purified oil is

now partially resinified by heat. For this purpose it is introduced into large cast-iron pots, and boiled until inflammable vapours are freely evolved. These are ignited and allowed to burn for a few minutes, after which they are extinguished by placing a tight cover over the boiler. Ebullition of the oil is continued until, on cooling, a firm skin forms on its surface, known by placing a drop on slate or other smooth, cold surface. Other drying oils besides linseed are occasionally used, but their cost, or other considerations, prevents their general adoption. Resin oil, is, indeed, pretty largely employed, but apart from other disadvantages, its disagreeable and permanent smell prevents its entering into other ink than that intended for temporary or common printing, as newspapers, posters, &c. Paraffin oil, which has lately been used, is open to the same objections. Resin is an article of considerable importance in the manufacture of printing ink, since, when dissolved in the oil—after the latter has undergone ebullition and inflammation—it communicates body to the fluid. For many inks the quality of the common black resin is sufficiently good, but some require the pale, clear, transparent resin, obtained by re-melting and clarifying the residue of the distillation of turpentine with water. The colouring matters of printing ink demand great attention, as much of the beauty of typography depends upon them. The universal ingredient for black ink is lamp black. No expense is spared to get the most superior qualities. Other black substances are occasionally used. Charcoal from various substances, when reduced to an impalpable powder, and mixed with other ingredients, furnishes a deep, blue-black ink that dries rapidly. The brown tint possessed by lamp-black is not unfrequently neutralised by the addition of blue compounds, as indigo, Prussian blue, &c. The various colouring matters employed in the preparation of other inks are all selected for their superior and approximate qualities. Indeed, the manufacture of printing ink is an especial business and demands considerable capital. Every manufacturer has his own secrets, both as to material and process, and by long experience alone can printing ink manufacturers so select and apportion the numerous ingredients as to adapt it to its numerous requirements. In the manufacture of printing ink, the resin is dissolved in the burnt oil, in cast-iron pots or boilers, and the varnish, thus prepared, is introduced into what is termed the "mixing vessel," which is cylindrical, and in the centre of which bars, or rods of iron, attached to a perpendicular shaft, revolves in a horizontal position. The colouring matter is then added to the hot varnish, and the whole, when thoroughly mixed, is drawn off through an opening in the base of the vessel. The pulp is next very carefully ground, by being passed between hard stones of a very fine texture, driven by heavy machinery, the motive power being steam. Sometimes a second grinding is requisite, but this may generally be avoided, by taking care that the varnish of resin and oil is clear and free from gritty particles, and that the black is in an impalpable state. The proportions and conditions of the various ingredients vary considerably, and great experience is required before an ink can be prepared to suit any one purpose. The oil has to be rendered more viscid, by burning, in some cases than in others; sometimes the quantity or kind of resin requires to be varied; or, perhaps, different proportions of colour are requisite. Newspapers printed on machines require an ink of less substance than that employed for book-work, which must be tolerably stiff. For wood-cuts, the ink must not only be very stiff, but very fine. The qualities of the material to which the ink is applied furnish an additional guide in this matter—thin paper must have a soft ink, which works clearly and is not too adhesive. A fine, stout paper, on the other hand, will bear a stiffer and more glutinous ink, and as resin supplies these properties, so does it, in a great measure, communicate brilliancy, and the most perfect and splendid effects are by these means produced. Posters, with large wood type, require a semi-fluid ink, but one not surcharged with oil. Ordinary news-work requires a better quality, more "tacky" and finely ground. Good book-work should have a stiffer bodied ink, soft, smooth, and easily distributed. Job ink, which is made expressly for press-work on dry paper, should be used only for such work. Book and job inks are not convertible; an ink for wet paper will not work well on dry paper, and *vice versa*. Very fine presswork, such as woodcuts, or letterpress upon enamelled paper, requires an ink

impalpably fine, of brilliant colour, of strong body, yet soft enough to be taken up smoothly on the inking rollers. Every general printing office should keep four grades of ink—News, Jobbing, Book, and Woodcut. Fine presswork is impossible without good ink. To recapitulate: the cardinal virtues of good ink are, intenseness of colour; impalpability; covering the surface perfectly; quitting the surface of the type or engraving when the paper is withdrawn, and adhering to the surface of the paper; not smearing after it is printed; and retaining ever afterwards its original colour without change. Inks which are properly manufactured on sound chemical principles, should possess the additional advantages of keeping the roller in good working order, distributing freely, working sharp and clean, and drying rapidly on paper; the colour should be permanent, without a tendency to turn brown by age. The *price* of printing inks has undergone some remarkable modifications of late years. In a price list contained in Stower's "Printers' Grammar," published in 1808, the very cheapest quality is quoted at 16d. per lb.: very good useful ink is now largely supplied at less than 6d.—See DRY COLOURS, and PRINTING IN COLOURS.

Inking a Forme.—See ROLLING.

Inking Apparatus for the Hand-Press.—Messrs. R. Hoe & Co. have invented an improved apparatus for the hand-press. It is attached to an ordinary press, and the inking is done by the ordinary operation of the press, thus dispensing with one person's labour. It also gives a more perfect distribution. The large distributing cylinder, which is turned by a crank, vibrates. There are two rollers to ink the forme, moving in a carriage with four wheels, those on one end being plain, those on the other having a projecting flange. Two wrought-iron rails lie on the bed of the press, outside the chase: one of them grooved to receive the projecting flanges on one pair of the wheels, the other level on the surface. Projecting from the frame are two short rails, on which the wheel rests while the rollers are receiving ink from the cylinder. The machine is set up behind the press so that the short rails on it agree exactly, both in height and width, with the rails on the bed of the press when it is run out. The journal boxes of the inking rollers have adjusting screws, so that they may bear more or less on the type, as circumstances require.

Ink Fountain.—That part of a machine in which the ink is contained. The ink fountain should be charged with the ink selected and kept well covered, to secure it from dust. Then the screw should be turned down, and all the ink cut off evenly. When the forme is ready, the ink should be cautiously turned on, and the machinist should wait for ten or twelve impressions before altering the screws. For small formes and short numbers of any job of machine work in coloured ink or extra ink, a fountain is not necessary, as the ink may be applied to the distributing surface with a brayer or palette knife.

Ink Table.—The surface upon which the roller is distributed, previously to being used for the forme. The back of the table is slightly raised, having two receptacles—one for ink, the other for the brayer. The ink is spread in small quantities along this raised portion by means of the brayer, so as to give an even supply to the roller across its entire length. The roller having been lightly dipped into the ink so spread, is distributed about the front of the table until it is covered evenly all over, it is then ready for inking the forme. Various improvements have been made in the manufacture of ink tables; some being supplied with an ink duct, similar to a machine, the feeding cylinder being turned by means of a handle, or worked by a treadle.

Inking-up the Roller.—Every evening, when leaving off work, and occasionally at meal times, the pressmen smother their rollers in a thick layer of common ink, to preserve the face and keep them from getting hard; this is technically termed "inking-up the roller." In winter time, as the weather has a tendency to harden the composition, some pressmen introduce a quantity of oil into the ink used for this purpose, as it imparts a suppleness to the face of the roller.

Inner Forme.—The forme which contains the inner pages of a sheet, commencing with the second page. For instance, in

a sheet of quarto the inner pages would be 2, 3, and 6, 7, which could not be read until the fold at the head is cut. It perfects the first or outer forme, and is usually worked first.

Inner Tympan.—A frame covered with parchment, which fits into the outer tympan (*q.v.*).

Inset.—A loose sheet inserted into any book or pamphlet.

Interleaving.—In fine work, particularly when the paper is heavy, and the type large and black, set-off sheets are used to interleave the whole impression while working. The same is done where large woodcuts occur. Diaries are now usually interleaved with blotting-paper.—See SET-OFF SHEETS.

Inside Quires.—The perfect quires of paper, containing twenty-four good sheets in each. They are thus designated to distinguish them from the outside or corded quires.

Inside Sheets.—The thin sheets used by pressmen for placing between the tympan of the press.

Interrogation, Sign of (?).—A sign used in punctuation. A note of interrogation is used at the end of an interrogative sentence; that is, whenever a question is asked. Sometimes, however, several apparent questions are included in one sentence, when it may not be necessary to use more than one interrogation at the end. These examples contain but one cumulative question, to which but one, if any, answer is required. Were three distinct questions put, and an answer required to each, then each interrogation should be marked with its appropriate sign, for there would be so many interrogative sentences. When sentences or expressions which are affirmative when spoken or written are quoted by a writer in the form of a question, the interrogative mark should follow the quotation marks and not precede them. The reason is clear: the words quoted are those of another, but the question is the writer's own. An interrogation should not be used in cases when it is only stated that a question has been asked, and where the words are not used as a question. In France and other countries on the Continent the interrogation is used, inverted, at the commencement of quotations as well as at the end. A thin space is usually placed before a sign of interrogation.

Inverted Comma (‘).—This mark is used in place of a *c* in proper names having the prefix *Mac* contracted into *Mc*, or *M'*; as *Macdougall*, *McDougall*, or *M'Dougall*, where it will be observed that no space intervenes between the two parts of the word. But the apostrophe, not the inverted comma, is used in certain Irish names beginning with *O'*, as *O'Donnell*. Inverted commas are used also to mark the commencement of a quotation. Foreign founders cast them double.—See QUOTATION MARKS.

Irons.—A term used on newspapers. Usually the furniture for imposing the pages of a newspaper is of iron, as well as the chase; and as the printer makes-up the pages, he calls upon the "stone-man" to "put in irons," *i.e.*, impose it.

Italic.—This description of letter was designed by Aldus Manutius, a Roman, who, in the year 1490 (says Stower, in his "Printers' Grammar"), erected a printing office in Venice, where he introduced the Roman types of a neater cut, and invented the letter which we, and most of the nations in Europe, know by the name of Italic. Italic was originally designed to distinguish such parts of a book as might be said, not strictly, to belong to the body of the work, as prefaces, introductions, annotations, &c., all of which it was the custom formerly to print in Italics. In the present age it is used more sparingly, the necessity being supplied by the more elegant mode of enclosing extracts within inverted commas, and poetry and annotations in a smaller sized type. It is of service often in displaying a title page, or distinguishing the head or subject matter of a chapter from the chapter itself. The too frequent use of Italic is useless and absurd. It also very materially retards the progress of the compositor, who has the trouble of repeatedly moving from one case to another in composing. It is too often made use of to mark emphatic sentences or words, but without any rule or system, and so destroys, in a great measure, the beauty of printing, and often confuses the reader where it is improperly applied, who, pausing to consider why such words are more strongly noted,

loses the context of the sentence and has to revert back to regain the sense of the subject. Not only does Italic so confuse the reader, but the bold face of the Roman suffers by being contrasted with the fine strokes of the Italic; that symmetry and proportion is destroyed which it is so necessary and desirable to preserve, the former being a parallel, the latter an oblique position.

Its own Paper.—When one or more proofs of a work or job are printed on the paper that the whole is intended to be worked on, it is said to be "pulled on its own paper." This is frequently done at the commencement of a work, when a proof of the first sheet is sent to the author or publisher that they may see the effect before the work is actually proceeded with.

J.

Jeffing.—Throwing with quads. The plan adopted is to take nine em quads—Long Primer being mostly chosen; these are laid on the imposing surface for the inspection of the whole of the party interested in the matter at issue. One of them takes up the quads, shakes them up between his two closed hands, and throws them on to the imposing surface, after the manner of dice, when the number of quads with the nicks appearing uppermost are counted, each person having three throws (*malle-fashion*), the highest thrower being the winner, or taking his choice of any "fat." This performance is not so much in vogue now as it was years ago, before the "clicking" system came up; then it used to be of daily occurrence in the composing-room, when the title, index, blanks, tables, &c., of a work were given in hand, for the compositors to throw who should have the best choice of the "fat." The title-sheet was divided into lots, say: 1, title and blank; 2, preface; 3, dedication and blank; and so on, according to the prefatory matter introduced into the work. Words of Greek, for which one shilling per sheet is charged, were also "thrown for;" but the clicking system does away with all that, by *throwing* it into the general bill; so that each of the companionship comes in for a proportionate share of "fat" as well as "lean." There are some technicalities connected with "throwing," *viz.*: if when the quads alight on the "stone," one should ride on the other, it is called a "cock," and the thrower has to pitch them up again; if no nicks turn up, it is called a "miss,"—and by some loving swains, a "Mary" or a "Susan,"—and counts for nothing. The average winning throw is seven, and is *nick*-named "the witch." Nine is considered an excellent throw, and is very seldom exceeded. On very rare occasions, however, three blanks have been thrown, or three nines have made their appearance consecutively by the same thrower; but this is very exceptional. The same custom also exists amongst the type-founders, who, as well as the printers, throw to see who shall pay for the whole or the greater part of any refreshment they may be going to have; but they have a different name for it to the printers, calling it "Bogleing;" and when two is thrown, they call that a "duck," from the shape of the figure 2 having some resemblance to a duck's neck.

Jerry.—A peculiar noise made by compositors and pressmen when one of their companions renders himself ridiculous in any way. It is sometimes made by rapping with the knuckles on the bar of the lower-case; or drawing a piece of reglet sharply down the boxes of the upper-case. When an apprentice comes out of his time, all kinds of instruments are used to "jerry" him, such as striking empty chases with iron side-sticks, rattling the quoin drawers, &c. Modern discipline has almost completely abolished this custom.

Jobbing.—That branch of the printing business which is devoted to the execution of job-work, as distinguished from book-work and news-work. The definition of a "job" is extremely difficult, for work which would be regarded as job-work in one house is not so considered in another. Savage says: "A job is anything which, when printed, does not exceed a sheet," but pamphlets of five or more sheets frequently come under this designation, and even a periodical may be done as a "job" in a large office. The more general practice, however, is to call such things as placards, circulars, cards, &c., jobs, pamphlets book-work, and periodicals news-work. The trade rules certainly define the nature of job-work more strictly than this, for the

purpose of approximating to a scale of prices for labour done; but the word is generally applied to a much larger variety of work than would be included in this definition. Jobbing, in short, may be roughly divided into classes, as follows:—

1. Circulars, including professional and trading circulars; Notices of openings of premises and of removal; of partnerships and partnerships dissolved; Prospectuses of companies; Reports of meetings, financial reports, commercial circulars, price lists.
2. Cards, including visiting cards, traders' cards, invitation, and "at home" cards, tickets of admission, direction cards, time-table and calendar cards, ball programmes, cartes du menu, cards of membership, memorial cards.
3. Billheads, including invoices, statements of accounts, and bills of particulars.
4. Handbills, including trade handbills, programmes, bills of the play, police notices.
5. Posting Bills, including Auction bills, sermon, bazaar, lecture and meeting bills, official regulations, proclamations, general trade bills, contents bills, theatre bills, concert bills, lost and found bills.
6. Blank Forms, including memorandums, blank tables, pawn-tickets, railway and other share scrip, cheques, allotment forms, and headings.
7. Labels, including direction labels and ornamental labels.

Besides these there is a large class of what may be called general work. Under this category will come Auctioneers' catalogues, which vary in style according as they are commercial sale catalogues, real-estate, property and land sale catalogues; Almanacks, Diaries, Conditions of Sale, Chancery Bills, Acts of Parliament, &c. Each one of the kinds of work we have enumerated has its own fixed custom in regard to its style of composition and the size and description of paper or other material upon which it is to be printed. For instance: a catalogue of a sale of houses is set out on a totally different principle to that relating to a sale of household furniture or stock-in-trade, and while the one is invariably a full folio sheet, the other is usually a mere octavo. A catalogue of a sale of cotton, fruit, or wood, would differ entirely from either, and be a long narrow strip with rules between each line. No two sheets could be more dissimilar than a sermon bill and a play bill, either in shape or the style of letter employed. Many printers, indeed, now confine themselves to one branch of jobbing; thus there are large establishments where auctioneers' work is chiefly produced, others where coloured placards and tea papers are executed, others who print only for pawnbrokers, or for law stationers, &c. These offices are furnished specially with a view to the rapid and economical production of one kind of work.

Jobbing-hand.—A compositor who generally confines himself to jobbing-work. The principle of "division of labour" prevails very much in the printing business. There are book-houses, news-houses, and job-houses; and apprentices brought up in them usually turn out either book, news, or job-hands. They become specially expert in their own "line," and in large towns and in extensive offices are found most useful to the employer. In smaller towns, and in small offices everywhere, a greater variety of attainment is necessary, and then the job-hand has the best chance of employment, as on an emergency he can undertake the other kinds of work, whereas a news-hand, who has been brought up to nothing else, is useless for general jobbing. In job-work some taste and wide experience are absolutely essential; in news and book-work rapid and clean setting are a man's chief recommendation. The former demands a knowledge of the style and effects of every description of type, the sizes and fractional parts of paper, together with an acquaintance with the system of setting up each one of the varieties of jobbing we have enumerated above. This valuable knowledge can be acquired only by long observation and practice.

Jobbing Machines.—Small machines constructed specially for the printing of job-work. They are intended to execute every variety of job that was formerly done on the hand-press, but with much greater economy, rapidity, and ease in working. Some of them are made to work cards only, at a very high speed. There are many now produced which print any kind of job at a speed, by hand, of ten to twelve hundred per hour. The cha-

acteristics of a good jobbing machine are, in addition to its being constructed on proper mechanical principles, by good workmen and in sound materials—its strength, its being well fitted up, non-liability to get out of order, facility of working, freedom from unnecessary and complicated wheels, straps, &c., so that a workman may easily understand every part of it, an arrangement for stopping the cylinder, to prevent the blanket being uselessly inked or waste sheets run through, its portability, and capability of being worked on an ordinary floor without causing vibration, facility in making ready a forme, speed, time allowed for feeding in, minimum of concussion of the bed at the end of the ribs, the precision of its register, freedom from noise in working, the fewness, simplicity, and accessibility of the working parts, clearness and distinctness of impression, perfect distribution of ink, &c., &c. It would, perhaps, be unreasonable to expect all these "points" in perfection in any one machine, but as each of them is of great importance, and contributes to the aggregate value of the article, purchasers should endeavour to select those only which most nearly approach to the perfection which would characterise any machine which should possess to the full every recommendation we have enumerated.

Jobbing Office.—An office in which jobbing-work mainly is executed. Jobbing offices form a large majority of the printing establishments throughout the country. Many of them include both news-work and book-work. The great difference between a news-office and a job-office lies in the variety of the founts in the latter. In the one there are few different kinds of founts, but each of them is exceedingly extensive; in the other the founts are much smaller but vastly more numerous. The departments of a job-office are: the composing department, the printing department, and the warehouse. The composing department includes founts of all the regular-sized plain letters, from Nonparcil or less to Pica, as well as selections from the fancy types—Titlings, Condensed, Expanded, Sanseriff, Skeleton, Antique, Clarendon, Elongated, Grotesque, Classic, Tuscan, Latin, Romanesque, Augustan, old English, Script, Secretary, Mercantile; and in addition, a stock of wood and metal poster letters, rules, dashes, and ornaments; furniture, reglet, leads, and quotations; imposing surfaces and frames, galley and forme racks, composing frames, cases, galley press, shooters, mallet, planers, and quoins, composing sticks, and sundries. The printing department includes engine and boiler, maulines, presses, rollers, ink, banks, horses, wetting-trough, boards, &c. The warehouse department includes standing presses, glazed boards, cutting machines, rolling, card-cutting, numbering, and perforating machines. Even after all these appliances have been acquired there is a constant necessity for novelties and improvements, in order to compete successfully with other houses in the business. For descriptions of the various appliances see the names of each in its alphabetical order.

Journeyman.—A person who has duly and faithfully served his time of apprenticeship, which in the printing business extends over seven years.—See TRADE REGULATIONS.

Justifier.—In typefoundry, the man who justifies matrices.—See TYPEFOUNDING.

Justify a Stick.—Screwing the slide of the composing stick to the measure required. Sometimes called "making the measure."

Justifying.—Spacing out a line so that it fits with a proper degree of tightness in the measure of the composing stick; placing a woodcut or block in a page and filling up the vacancies with leads, quadrats, quotations or furniture, so that when the forme is locked-up the whole shall be fast and firm. In regard to ordinary justifying in the stick, and to avoid the trouble of putting in many thin and hair spaces, or changing those already in for narrower ones—which is at all times an exceedingly delicate operation, and frequently attended with great annoyance and trouble, owing to the danger of breaking the line, various mechanical means have been employed in vain so far; but a plan by Mr. Mackie, of Warrington (whose name turns up in other parts of this work), bids fair to be practicable and remunerative. He intended it exclusively for his composing

machine, but now offers it to the trade. Mr. Mackie's plan is to use corrugated, or grooved, spaces made of lead. A stickful of matter is spaced with his spaces in the ordinary way as near the proper length as convenient, but at least as long as each line should be, the setting-stick being an ordinary one with the sides slotted and the right hand side moveable by a screw, to the extent of one or two ems. The setting-rules (each line has its own) are left in until the stick is full, so that the matter may slide one line along another. The effect of the compression is to elongate the quads to their length before corrugation, and produce a uniformity in length and spaces which no hand setting can equal. Twenty lines set to within one, or even two ems, are "justified" instantly, and the spaces can be re-corrugated by any boy as wanted. They seem no worse for their squeezing, neither is the type injured. This plan seems to leave nothing to be desired. For the Composing machine Mr. Mackie uses a "stick," or rather "galley," which holds one hundred lines, and by a screw pressure a sidestick compresses all the lines to one length in an instant. The following will give an idea of the operation:—

More unsatisfactory treatment of a pressing difficulty it would not be easy to find than the fate which befel the Judicial Committee Bill on Monday night. Introduced at the fag-end of the Session to a thin and exhausted House, and vigorously opposed by a mere handful of Members, this measure was nevertheless so very plainly

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Accurate justification is absolutely necessary. If the line is short the letters will not stand properly on their feet, and it is then impossible to get a fair impression from the line. Besides, the letters are liable to drop out in lifting the forme, and a column or a page may be easily broken through carelessness in this respect. Even if badly-justified matter is got safely to the press, the action of the roller is liable, if not almost sure, to draw out letters, by which means many letters or perhaps a valuable wood-block may be battered, and ruined completely. Indeed, carelessness in justifying is a fruitful cause of accident and damage of all kinds. Many chases, for instance, are broken by being locked up too tight, to obviate the result of bad justifying and loose lines. Apprentices should be strictly cautioned against allowing themselves to fall into the bad habit, for when once acquired it becomes actually irksome to take the proper amount of care to justify a line properly. Some compositors adopt the plan of justifying their lines slackly, others tightly; but the latter is far preferable; for what compositor can judge, in slack spacing, whether he has justified each line precisely the same as the previous one, whereas, if he adopts the principle of spacing each line as tight as the measure will admit reasonably, he is sure to have every line alike,—especially is this necessary in table-work.

K.

Keep in.—A direction given to a compositor in order that he may bring his composition within a certain limit. To carry it out he sets closer than usual.

Keep out.—See **DRIVE OUT**.

Kern of a Letter.—That part of the face of a letter which hangs over one or both sides of its shank. In Roman, f and j are the only kerned letters; but in the Italic *d*, *g*, *j*, *l*, *y* are kerned on one side, and *f* on both sides of the face. Many Italic capitals are kerned on one side of the face.

Knock up.—In warehouse work, to knock up paper is to get it into such a condition that every sheet exactly covers, but does

not over-hang at any edge, the sheet below. The sides of the heap, after the paper has been properly knocked up, should present the appearance of a perfectly smooth surface. The warehouseman takes up a small quantity of paper (according to the stoutness or flimsiness) and holding it loosely at the edges with both hands, he bends the ends slightly towards him so that the paper shall form a curve; he then lifts it up a little from the table and lets it drop upon its edge through his hands—the curve giving the edge a certain firmness, many of the sheets drop down into their places; he repeats this two or three times, and will then, in letting it drop upon the table, bring the lower part nearer to him, so that the outside of the curve may strike first, and throw the sheets gradually up higher at the back. This he will do also two or three times. He then lets the further side rest upon the table, and shuffles the sheets gradually away from him, lifting the whole up, and letting the edges drop upon the table three or four times. Repeating these operations soon brings all the sheets even, both at the ends and sides. He then lays this taking on one side and repeats the operation with other takings, laying them on each other till he has completed the whole. A soft flimsy paper takes more time in knocking up than a hard paper, as the sheets have not strength enough separately to be driven into their places by striking on their edges.

L.

Larceny Advertisements Act.—An Act (33 & 34 Vic., c. 65) has recently been passed to amend the law relating to advertisements respecting stolen goods. Under the Act 24 & 25 Vic., c. 96, any person who prints or publishes advertisements for the return of stolen goods without questions being asked, forfeits the sum of fifty pounds to any person who will sue for the same by action of debt (*Sec. 102*). This provision having given occasion to many vexatious proceedings at the instance of common informers against printers and publishers of newspapers, it was thought expedient to pass a new Act, which stayed proceedings in actions brought before its passing; and provides that—

Every action against the printer or publisher of a newspaper to recover a forfeiture under section one hundred and two of The Larceny Act, 1868, shall be brought six months after the forfeiture is incurred, and no such action against the printer and publisher of a newspaper shall be brought unless the assent in writing of Her Majesty's Attorney-General or Solicitor-General for England, if the action is brought in England, or for Ireland, if the action is brought in Ireland, has been first obtained to the bringing of such action.—*Sec. 3*.

Laws relating to Printers.—A great number of laws have been enacted at different times with the view either of repressing the power of the Press or of exercising a censorship over its utterances. In addition to these, various acts have been passed imposing duties for fiscal purposes, either on the material upon which newspapers are printed, upon portions of their contents, or upon their transmission at home and abroad. Most of these are now happily entirely repealed, and a degree of freedom is enjoyed by the conductors of journals in this country such as is unknown in almost any other part of the world.—In the reign of Queen Anne (1712) *Advertisements* were first subjected to a duty (10 Anne, c. 19), and it was charged according to length. Some change took place, and the duty, which had been reduced from 3s. 6d. to 1s. 6d. in great Britain, and from 2s. 6d. to 1s. in Ireland, by 3 & 4 Wm. IV., cap. 23 (June 28, 1833), was entirely repealed by 16 & 17 Vic., c. 63, s. 5 (August 4, 1853).—The *Stamp Duty* was levied for the first time also in the reign of Queen Anne (10 Anne, c. 19), August 1, 1712. After several modifications the duty was fixed by the Act 6 & 7 Wm. IV., c. 76, as follows: For every sheet or other piece of paper whereon any newspaper shall be printed, One Penny; and where such sheet or piece of paper shall contain on one side thereof a superficies exclusive of the margin of the letter-press exceeding 1530 inches and not exceeding 2295 inches the additional duty of One Half-penny; where the same shall consist of a superficies exceeding 2295 inches the additional duty of One Penny; provided always that if the sheet does not exceed 765 inches (exclusive of the margin) and is published as a supplement to a newspaper charged with the duty already named, it should be chargeable

only with the duty of One Halfpenny. The bill for the abolition of this stamp duty (18 & 19 Vic., cap. 27) received the royal assent June 15, 1855.—Besides these two "taxes on knowledge," as they were popularly called during the long and excited agitation which prevailed from 1850 to 1860, there was also a *Paper Duty* levied under the Act 2 & 3 Vic., c. 23, of three halfpence on every pound weight of paper. This was abolished by 24 Vic., c. 20 (June 12, 1861).—The three taxes thus repealed partook of the character of fiscal imposts, although one or more of them was originally enacted with the view of crippling the press and of affording a ready and decisive means of discovering the printer and publisher of every public journal in the kingdom. But for centuries other and even more obnoxious restrictions had been in force, directed against the press. The last of these has only been repealed within the past two years. The 6 & 7 Wm. IV., cap. 76, entitled "An act to reduce the duties on newspapers, and to amend the laws relating to duties on newspapers and advertisements," enacted that no person should print or publish any newspaper before there should be delivered to the Commissioners of Stamps and Taxes, a declaration in writing containing—

The correct title of the newspaper.

A true description of the building in which it is to be printed, and of the building in which it is to be published.

The true name, in addition, and place of abode of every person who is intended to print, to publish, to be interested in the proprietary of the paper, with the proportional shares of the proprietors, in certain cases.

A declaration of a similar import was to be made on the occasion of any change in the arrangements, particulars of which were required, as well as when the persons named changed their abodes, or the title of the paper, or the name of the printing-office was altered; and in fact, "whenever in any case, or on any occasion, or for any purpose" the Commissioners or any officer of customs should require it. The penalty for non-observance of these requirements was fifty pounds for every day on which the newspaper was printed or sold before the declaration was made. But there were also additional restrictions. The newspaper could not be published until the printer or publisher, together with the proprietor, together also with two sufficient sureties, should have entered into security by bond in such sum as the Commissioners should think reasonable and sufficient to cover penalties and duties imposed by that and previous acts. By the 32 & 33 Vic., c. 24 (12 July, 1869), entitled "An Act to repeal certain enactments relating to newspapers, pamphlets, and other publications, and to printers, type founders, and reading rooms" the provisions of a number of acts were entirely or partially repealed. The following is a list of them:—

36 Geo. 3, c. 8.—An act for the more effectually preventing seditious meetings and assemblies.—Entirely repealed.

39 Geo. 3, c. 79.—An act for the more effectual suppression of societies established for seditious and treasonable purposes, and for better preventing treasonable and seditious practices.

[This Act required that places for lectures or debates, or for reading books, newspapers, &c., to which places persons are admitted on payment, should be licensed at the Sessions. Also, that persons having or making printing presses or types should have them duly registered by the Clerk of the Peace.]

Sections 15 to 23, both inclusive, repealed; also so much of sections 34 to 39 as relates to those sections.

51 Geo. 3, c. 65.—An Act to explain and amend the last-named Act.—Entirely repealed.

55 Geo. 3, c. 101.—An Act to regulate the collection of Stamp Duties and matters in respect of which licenses may be granted by the Commissioner of Stamps in Ireland.—Section 13 repealed.

60 Geo. 3, and 1 Geo. 4, c. 9.—An Act to subject certain publications to the duties of stamps upon newspapers, and to make other regulations for restraining the abuses arising from the publication of blasphemous and seditious libels.

[These Acts required the printer of a newspaper to enter into a recognizance with sureties to pay any fine imposed on conviction for a blasphemous or seditious libel, and to send copies of every paper to the stamp office.]—Entirely repealed.

11 Geo. 4, 1 Wm. 4., c. 73.—An Act to repeal 60 Geo. 3, and to provide further remedy against the abuse of publishing libels.—Entirely repealed.

6 & 7 Wm. IV., c. 76.—An Act to reduce the duties on newspapers, and to amend the laws relating to the duties on newspapers and advertisements.

[This Act regulated the printing of the date, title, &c., of newspapers, and the name of the printer, and requiring a declaration (see *supra*) before a newspaper could be printed.]—Repealed, except sections 1 to 4 inclusive, sections 34 and 35, and the schedule.

2 & 3 Vic., c. 12.—An Act to amend 39 Geo. 3, and to put an end to certain proceedings now pending under the said Act.—Entirely repealed.

5 & 6 Vic., c. 82.—An Act to assimilate the Stamp Duties in Great Britain, Ireland, &c. The part repealed is the sentence "and also license to any person to keep any printing presses and types for printing in Ireland."

9 & 10 Vic., c. 33.—An Act to amend the laws relating to corresponding societies and the licensing of lecture rooms.—Repealed so far as it relates to any proceedings under the enactments repealed in this schedule.

16 & 17 Vic., c. 59.—Relating to Stamp Duties in Ireland. Repealed in part, viz., that portion of section 20 which makes perpetual 5 & 6 Vic. c. 82 repealed by this Act.

The foregoing statement shows how a number of old and oppressive enactments have been eliminated from the Statute Book. It remains to be stated how far legislative interference with the press is still maintained by the Act before referred to (32 & 33 Vic. c. 24.) That Act continues the force of the following Acts:—

39 Geo. 3, c. 79.—Every person who shall print any paper for hire, reward, gain, or profit, shall carefully preserve and keep one copy (at least) of every paper so printed by him or her, on which he or she shall write, or cause to be written or printed, in fair and legible characters, the name and place of abode of the person or persons by whom he or she shall be employed to print the same; and every person printing any paper for hire, reward, gain, or profit, who shall omit or neglect to write, or cause to be written or printed as aforesaid, the name and place of his or her employer on one of such printed papers, or to keep or preserve the same for the space of six calendar months next after the printing thereof, or to produce and show the same to any justice of the peace who within the said space of six calendar months shall require to see the same, shall for every such omission, neglect, or refusal forfeit and lose the sum of twenty pounds.—*Sec. 29.*

Nothing herein contained shall extend to the impression of any engraving, or to the printing by letter-press of the name, or the name and address, or business or profession, of any person, and the articles in which he deals, or to any papers for the sale of estates or goods by auction or otherwise.—*Sec. 31.*

No person shall be prosecuted or sued for any penalty imposed by this Act, unless such prosecution shall be commenced, or such action shall be brought, within three calendar months next after such penalty shall have been incurred.—*Sec. 34.*

And any pecuniary penalty imposed by this Act, and not exceeding the sum of twenty pounds, shall and may be recovered before any justice or justices of the peace for the county, stewardry, riding, division, city, town, or place, in which the same shall be incurred, or the person having incurred the same shall happen to be, in a summary way.—*Sec. 35.*

All pecuniary penalties herein-before imposed by this Act shall, when recovered in a summary way before any justice, be applied and disposed of in a manner herein-after mentioned; that is to say, one moiety thereof to the informer before any justice, and the other moiety thereof to His Majesty, his heirs and successors.—*Sec. 36.*

51 Geo. 3, c. 65.—Name and residence of printers not required to be put to bank notes, bills, &c., or to any paper printed by authority of any public board or public office.—*Sec. 3.*

6 & 7 Wm. 4, c. 76.—If any person shall file any bill in any court for the discovery of the name of any person concerned as printer, publisher, or proprietor of any newspaper, or of any matters relative to the printing or publishing of any newspaper, in order the more effectually to bring or carry on any suit or action for damages alleged to have been sustained by reason of any slanderous or libellous matter contained in any such newspaper

respecting such person, it shall not be lawful for the defendant to plead or demur to such bill, but such defendant shall be compellable to make the discovery required; provided always, that such discovery shall not be made use of as evidence or otherwise in any proceeding against the defendant, save only in that proceeding for which the discovery is made.—*8c. 19.*

2 & 3 Vic. c. 12.—Every person who shall print any paper or book whatsoever which shall be meant to be published or dispersed, and who shall not print upon the front of every such paper, if the same shall be printed on one side only, or upon the first or last leaf of every paper or book which shall consist of more than one leaf, in legible characters, his or her name and usual place of abode or business, and every person who shall publish or disperse, or assist in publishing or dispersing, any printed paper or book on which the name and place of abode of the person printing the same shall not be printed as aforesaid, shall for every copy of such paper so printed by him or her forfeit a sum of not more than five pounds; provided always, that nothing herein contained shall be construed to impose any penalty upon any person for printing any paper excepted out of the operation of the said Act of the thirty-ninth year of King George the Third, chapter 79, neither in the said Act or by any Act made for the amendment thereof.—*Sec. 2.*

Sec. 3 refers to books printed at the University Presses of Oxford and Cambridge.

Sec. 4 provides that no action shall be commenced except in the name of the Attorney or Solicitor-General in England, or the Queen's Advocate in Scotland.

9 & 10 Vic. c. 33.—Proceedings shall not be commenced unless in the name of the law officers of the Crown, and every action, bill, plaint, or information which shall be commenced, prosecuted, entered, or filed in the name or names of any other person or persons than is in that behalf before mentioned, and every proceeding thereupon had, shall be null and void to all intents and purposes.—*Sec. 1.*

The following enactment is still in force:—

13 Geo. 2 cap. 19 (to restrain and prevent the excessive increase of horse-races, &c.), by which it is enacted, "That every person or persons who shall make, print, publish, advertise, or proclaim any advertisement or notice of any plate, prize, sum of money, or other thing of less value than fifty pounds to be run for by any horse, mare, or gelding, shall forfeit and lose the sum of one hundred pounds."

See LARCENY ADVERTISEMENTS, LIBEL, and LITERARY PROPERTY.

Law Work.—As law work is executed in one uniform manner, and there are so many peculiarities connected with it, a few directions may save much time and trouble to the compositor. The names of parties to a suit are generally in *Italic* (except in newspapers), and the authorities, where the case is reported in Roman, contracted. If the name of the case is adduced in the argument, the authority follows in parentheses; but if the case is added parenthetically, of course the whole is enclosed within the appropriate symbols. Examples of both will clearly explain the plan to be adopted in each case by the compositor.

In *Thomas v. Waller* (4 Corb. & D. 61) and *Jones v. Peterson* (Adol. & El. 703), the matter is fully and satisfactorily reported.

An action of this nature must be brought within the time specified (*Reg. v. Kesterton*, 13 Co. Litt. 76), otherwise it will fail.

Here, the reader will observe, the short *and* (&) is always employed, and there is no comma after the full stop, between the authority and the page. The short *and* is also uniformly employed in reciting the years of the reign of any monarch in which an Act of Parliament was passed—thus: 15 & 16 Geo. 3, c. 21, with *Arabic* numerals after the name, and not *Roman* capital letters, which would be too cumbersome, and not half so clear. In all instances of this sort the figures should never be separated at the end of a line from that to which they belong; nor should the constituent parts of what forms but *one portion* of the reference. Thus, in the instance given above, 15 should not end a line, and the next begin with &; neither should Geo. be separated from the accompanying 3; nor *c.* from 21. Nor, in like manner, the letters denoting any office, such as *Cockburn, C.J.*, where the C. and J. should always be in the same line. And so in all other cases. To do otherwise would be

extremely unsightly. When a number of authorities are given, with the reports where found, each case is separated from the following one by a semicolon, in the following manner, if they depend or read on with what has been previously said. Thus: "The authorities on which I rely (12 and 13 Car. 2, c. 14, s. 6; *Bell v. Bradfoot*, 6 T. R. 721; *Cook v. Jonas*, 2 B. and A. 433) are conclusive on this point." But if they do not so depend, or do not form an interposed parenthetical sentence, a full-stop may well be employed. There are some peculiarities about the printing of Chancery Bills that should be noted. The punctuation of these documents may be the same as is used in ordinary bookwork—a plan now sensibly encouraged by many eminent lawyers; or, a full-point only may be placed at the end of the sentences, and no other point whatever used. Or, they may be altogether unpunctuated. Whichever plan is adopted due written notice should be given to the compositor or clicker when the copy is placed in his hands. Capital initial letters are used only in proper names, and in the following and similar instances:—The names of public officers, as Her Majesty's Attorney-General, Solicitor-General, Master (in Chancery), his Honor, &c.; the names of public funds or stocks, as Consols, Consolidated Bank Annuities, the said £3 per Centum Bank Annuities, Exchequer Bills. Also, the Bank (when speaking of the Bank of England), the Court (of law, &c.), Honorable Court, the High Court of Chancery, the Government (when alluding to the Government of the country), Home Government, Colonial Government, Acts of Parliament, Bill of Complaint, Will, Plaintiff and Defendant, and the words Company and Society, whenever referring to a company or society being either Plaintiffs or Defendants. Contractions of words are only to be observed in original documents. Elsewhere, Co., Off., Plt., No., and similar words must be in full. Dates and sums of money, terms of years, and quantities of land, to be in figures. Copies of, or extracts from agreements, indentures, letters, &c., to follow copy as to spelling, contractions, punctuation, and in every other respect as near as practicable. Not a point to be inserted in any part of the Bill without special instructions, except in note at the end, or where names of Plaintiffs and Defendants are run on, in which case divide names by commas. Proper names must never be divided.

Laying down Pages.—The arrangement of the pages of a sheet on the imposing surface in their proper order. In taking up his pages for imposition, the compositor tightly grasps the paper on both sides of the page in order that it may be kept firm to the bottom of the page; for if it be left slack, the letters will be liable to slip out unless it be particularly well tied up. Having conveyed it to the stone, he next places the last two fingers of his right hand against the head of the page, but not under the page-paper at the head of it, still grasping the sides with his forefingers and thumbs. He then slips his left hand so that the palm of it may turn towards the bottom, and, lifting the page upright on his right hand, with his left he removes the paper. He next grasps again the foot end of the page with his left hand in the same manner as the right holds the head of it, and turning the face towards him, lays it squarely and quickly down, so that the whole page may come in contact with the imposing surface at the same time. As this method, in inexperienced and careless hands, would frequently endanger a page containing intricate matter, it would be safer to place the pages at first on good strong, but not rough or coarse papers, and when brought to the stone, instead of lifting them up as just noticed, slide them off the papers in the same manner as though they were on a slice galley (See TYING-UP PAGES), being careful that no particles of dirt remain under the page.

Laying down Sheets.—In the warehouse, this term is used to denote the placing the printed sheets of a work upon the gathering table in their proper order for the purpose of gathering them together into complete books. The first sheet in the gathering is laid down at the extreme end of the table at the left hand, and the succeeding sheets follow to the right in regular order, with the signature to the front of the table. The person who lays them down should run the signature page over in each heap to see that they all lay the same way, and have not been turned in knocking up or piling away, which when it happens and passes undiscovered causes a great deal of trouble in collating.

Laying Type.—Putting new type into the cases. The page received from the founder should be carefully unwrapped, and after having been laid on a galley, soaked thoroughly with thin soap-water, to prevent the types from adhering to one another after they have been used a short time; then, with a stout rule or reglet, as many lines should be lifted as will make about an inch in thickness, and placing the rule close up on one side of the bottom of the proper box, slide off the lines gently, taking care not to rub the face against the side of the box. Proceed thus with successive lines till the box is filled. Careless compositors are prone to huddle new types together, and, grasping them by handfuls, plunge them pell mell into the box, rudely jostling them about to crowd more in. This is an intolerable practice. The type left over should be kept standing on galleys in regular order, till the cases need replenishment. A fount of five hundred pounds of Pica may have, say four pairs of cases allotted to it; the same amount of Nonpareil, from eight to ten pairs.—See LAY OF THE CASE.

Laying-on Boy.—The boy who feeds the sheets into the machine.—See LAY ON.

Lay on.—A phrase used in the press or machine room. Thus: there are 1000 laid on; or, what forme shall we lay on? When there are woodcuts in one forme, and none in the other, then the forme without cuts should be worked first, as working the cuts last prevents the indentation of the types appearing on the engraving. The term is also used in printing at machines, where a boy *lays* the sheet on the feeding board, in order that they may be caught by the grippers or tapes.

Lay up.—Before the letter of a worked-off forme is distributed, or before it is cleared away, if the work be finished, it is unlocked upon a board, laid in the trough, and well rinsed with water, while the compositor keeps working the lines backward and forward with his hands, and continues pouring water on them till the ley and ink are washed away, and the water runs off clear. This is termed "laying up." The board should always be washed clean on its upper side before the forme is laid upon it. When a first proof has been read, it is the duty of the compositor who set the commencement of the sheet to lay up the formes on the stone and unlock them ready for the corrections to be made.

Leaded Matter.—Matter with leads dividing the lines.

Leaders (... or).—These consist of two or three dots, similar to full points, cast on one type, to the em body; there are also two, three, and four-em leaders, the number of dots being multiplied according to the number of ems they are cast in length.

Leading Article (or Leader).—Editorial comments on the topics of the day. The modern leading article may be said to have been invented by the late John Walter, of *The Times*. Before he took that paper in hand, the daily journals did not seek to guide public opinion or to exercise political influence. It was a *news* paper, little more; any political articles introduced being in the form of "Letters to the Editor." To the dismay of his father (says Mr. S. Smiles, in an article in *Macmillan's Magazine*), young Walter struck out an entirely new course. He boldly stated his views on public affairs, bringing his strong and independent judgment to bear on political and other questions.

Lead out.—A direction given in order that leads may be run through lines of matter.

Leads.—Thin pieces of metal of different thicknesses and different lengths, quadrat high, to put between the lines of matter to make it more open; they are also used to branch out titles, small jobs, and parts of a work where necessary. The bodies are regulated by Pica standard, and they are usually cast four, six, or eight to Pica, but they are sometimes very much thinner. Brasses are now very generally used on newspapers instead of leads: they are found to be exceedingly useful and economical, as they do not break or bend.

Leads Tray.—In order to keep leads in small quantities in their proper places and accessible without loss of time, Mr. Chas. Maillard has devised a Leads Tray, to which he has prefixed his

surname. The chief recommendation of the design, next to utility, is its simplicity. The principle of an ordinary type-case has been adopted, the object being to consign the tray or trays to an ordinary case-rack. Each tray will contain all the even measures of leads from four ems to twenty-eight, excepting only twenty-six ems, and the aggregate number of leads will amount in the instance of six-to-Pica, to more than five thousand, or 438 of each measure. For greater convenience, however, and to accommodate small jobbing printers, the leads tray is divided for the reception of both four-to-Pica and six-to-Pica, or other kinds; and the proportion of four's and six's will be as 176 to 174 of each measure, or more than four thousand in the aggregate—exceeding two thousand of each kind. The number would be ample for ordinary use, either singly or by piecing; and surplus leads might be stacked and stored in such a way as to be readily placed in the tray as it required to be replenished.

Lay of the Case.—The system upon which the various letters, points, spaces, quadrats, &c., are distributed among the different boxes in a case. No subject connected with printing has occupied more attention than this, and innumerable new schemes for proposed improved "lays" have at various times been brought forward. The result is, that nearly every office differs in the allocation of the various characters, and compositors have constantly to learn and to unlearn the arbitrary arrangements now in vogue. An American trade journal has proposed an alteration in the lay of one or two boxes in the lower-case, which we believe to be worth the attention of printers who are on the point of opening new offices. In a town where new hands are frequently taken on to work, there is a little difficulty in making any change, for the reason that such new hands may pie the boxes in consequence of it. But when this is not the case, an alteration that commends itself to common sense as a real improvement is worth adopting, even at a slight temporary inconvenience. The *Typographic Messenger* says: "If you want to gain five hundred to a thousand a day, you can do so without material alteration of the present case. All you have to do is to bring the en quads, thick, middle, and thin spaces together, so that time may be gained in justifying your lines, and you have the gain referred to. The only alteration incident to this modification is—the v goes to the present en-quad box, and the z and x to the thin and middle space boxes. The t and u boxes are thus driven over the space of one box, which gives no trouble, as they lie in the same direction; but it will take a few days to 'get the hang' of the v box in its changed position. The z and x, being so little in demand, it is of no consequence in what position they are." A similar change has been made for several years in many of our English offices—the transposition of the lower-case y with the middle and thin spaces. The usual place for this letter is next the o box on the right. Now, in setting or distributing, the hand has to travel the whole width of the case, or nine inches from the thick spaces to the thins and middles; and in justifying single lines of fancy and jobbing, for which the lower-case has occasionally to be used in the rack without mounting, it has to be drawn out so far as to hazard its tilting over. By putting the thin and middle spaces, however, into the v box, they are brought within five inches of the thicks; and being oftener required than the y, there is an actual saving of time by the change. And when the lower-case is merely wanted for justifying, the new position of the spaces only requires its being drawn out about one-fourth, or one-third, of its width. The advantages of this arrangement are:—

1st. In setting poetry and all matter where there is a frequent use of the em quad, or the matter is indented an en, the long reach to the right for these sorts is saved.

2nd. In the composition or correction of tabular matter, or figures, the galley can cover the right side of the lower-case, and the needful quads will be just under the hand of the compositor.

3rd. In distributing figures, the sweep performed by the hand will be only about half that now required. Again, in corrections the galley now has frequently to be heaved up, or pushed to or fro, to get at the en quad box—all of which would be avoided.

Concerning the mixing of the spaces, Mr. W. Spurrell, of Carmarthen, says: "It may be observed that mixing the middle and thick spaces is better than mixing the middle and thin. Indeed,

in composing solid matter, mixing the middle and thick seems to be more advantageous than keeping them separate. In a line containing six places for spaces there will be on an average, taking Caslon's bill for 800lb of Pica as a basis, four thick and two middle spaces, when these spaces are mixed in the box. Now, such a line may be spaced in thirteen different ways, from a middle space in each place to a middle and thin in each place, and the number of *changes* necessary to justify thirteen such lines would be twenty-four when the spaces are mixed, and forty-two when thick spaces alone are in the box. Allowing six changes for the chance of spaces not being in the best places, the advantage of mixing the thick and middle spaces would be represented by a saving of twelve changes in forty-two, in composing solid matter. Taking into consideration, however, that much time is lost in picking out the required space, when two sorts are kept together, the advantages and disadvantages of the three plans may be pretty correctly summed up thus:—

1. 30 changes and 24 sortings, when thick and middle spaces are mixed.
2. 42 changes and 63 sortings, when middle and thin are mixed.
3. 42 changes and no sorting, when thick, middle, and thin are kept separate.

Further, the longer the line, the greater the proportion of thick spaces used, and the greater the advantage of keeping them unmixed.

Lean Face.—A letter of slender proportions, compared with its height.

Lean Work.—The opposite of "fat" work (*q.v.*),—that is, poor, unprofitable work.

Letter required for a Job.—Printers are frequently in doubt as to the quantity of type which will be required for a book or newspaper. The following is a useful plan for ascertaining the quantity of type required for newspapers, and thus enables any publisher to make his own calculations, aided, as he will be, by the knowledge of what proportion of the paper is to be set in each size of type he intends to use. This method is simple, and will be found to be practically accurate. If but one page is to be set in a certain type, an allowance of 50 per cent. should be made for what will remain in the cases and for matter set up and left over. The greater the number of pages in the same size of type, the less the *proportion* of the extra weight of type needed. Thus:—

For 1 page weighing 100 lbs.....	150lbs. will be needed.
" 2 pages " " each.....	250 " " "
" 3 " " " "	350 " " "
" 4 " " " "	450 " " "

Therefore, if a newspaper of the size given is to be, say half Brevier and half Nonpareil, 250 pounds of each will be needed. If, however, it is very prosperous, and columns are sometimes crowded out, of course extra type must be purchased. We have made no allowance for space occupied by column rules, leads, dashes, &c. Experience has shown that estimates based as above give the *minimum* quantity of type necessary for a weekly newspaper; standing matter and letter remaining in case fully equaling the space occupied by leads, rules, &c., as well as the extra quantity of type allowed. No special rule can be laid down for daily papers, which vary so widely in the number of cases employed, the average quantity of matter crowded out or saved for a weekly, and the style of composition. It may be said, in a general way, that twice the weight of the pages is the least quantity of type that will answer for a daily alone, when worked most closely. What has been said, however, will afford a fair basis for calculations. In book offices, when the number and size of pages to be set down at one time are known, the quantity of type needed can be ascertained as above; an allowance of from twenty-five to fifty per cent. being made, according to the number of cases to be laid. A pair of cases holds about fifty pounds of type. The average weight of a square inch of matter is $\frac{1}{2}$ ounces. A square inch of matter is equivalent to thirty-six square Pica ems, and from this may be deduced the fact that 128 square Pica ems of matter weigh on the average

1lb. On this datum is founded the following simple rule for estimating the weight of any given quantity of matter.

RULE.—Divide the area of the matter, expressed in square Pica ems, by 128.

EXAMPLE I.—Required the weight of 56 columns of news, each 15 ems wide by 132 ems long ($2\frac{1}{2}$ in. by 22 in.).

$$15 \times 132 \times 56 = 110,880 \text{ square Pica ems.} \\ \div 128 = 866 \text{ lbs.}$$

EXAMPLE II.—Required the weight of type in a sheet of 32 pages, each 3 in. by 5 in., or 18 ems by 30.

$$18 \times 30 \times 32 = 17,280 \text{ square Pica ems.} \\ \div 128 = 135 \text{ lbs. weight required.}$$

Letter Board.—A board used for laying-up letter, generally made for Demy or Royal formes, the former being usually 26 in. by 22 in.; the latter, 30 in. by 26 in.—See LAY UP.

Letter Brush.—See LEY BRUSH and PICK BRUSH.

Letter Founders.—See TYPE FOUNDERS.

Letter Hangs.—If the matter transferred from the composing stick to the galley does not stand perfectly square and upright, it is said to "hang." It is the usual result of carelessness in emptying the composing stick.

Letter Paper.—See WRITING PAPER.

Letter-press Printing.—See IMPRESSIONS.

Letter Rack.—A rack for containing wood and metal letters of such a size that it would be inconvenient to keep them in cases.—See RACKS.

Letters.—All letters are either *plain* or fancy, according to their face. The *plain* include 1. Roman; 2. Italic; 3. Old English (or Black); all other varieties belong to the fancy sorts. The *parts* of a letter are, the feet, the nick, the shank (or body) the shoulder, the face, the beard. The *face* may be lean or fat; the *body* may be condensed or expanded. The face includes the stem, the serifs, and the kern. Letters may be accented, ascending, descending, double (or ligatures), long, short, inferior, or superior. The height of a letter is usually eleven-twelfths of an inch; of a quad or space, three-quarters of an inch. Scotch, and some foreign types, are, however, much higher, and some English offices have a standard of their own. The quality of a type is determined according to—1. The cut; 2. The shank, whether it be true or otherwise; 3. Its accurate range with other types of the same fount; 4. Its equal and uniform height; 5. The quality of the metal; 6. The depth of the face; 7. The depth of the nick. The imperfections in type are, as to its height—high or low; as to its breadth, bottled-necked, or bottle-arsed; and, generally, the burr. All of these technical terms are explained in this Dictionary in their alphabetical order.

Ley.—A solution of alkalis, potash, pearlash, &c., used to wash off the ink from a forme. The usual ingredient is pearlash—a gallon of water being mixed with one pound weight. It should be stirred up with a stick till the ash dissolves. The harder the water, the greater the quantity of pearlash required. A fine engraving on wood should never be brushed over with ley.

Ley Brush.—A brush nine or ten inches long, by three inches broad, used for the purpose of applying the ley to the forme and chase and cleaning it from ink. The hair should be close, fine, and long, in order not to injure the type, and yet to allow sufficient force to be used to search every interstice in the letter where the ink can have penetrated.

Ley Trough.—A shallow trough lined with lead or zinc, in which the formes are placed in order to be cleansed from ink. A loose board should lay in it, for the protection of the bottom.

Libel.—A libel may be regarded either as a private injury or a public offence. As a private injury, it consists in the publication, either by writing, printing, engraving, or otherwise rendering permanent (whereby it is distinguished from *slander*, which is verbal defamation only) any malicious and defamatory matter which tends to injure, degrade, or make odious or ridiculous the person respecting whom it is published. For this injury the person injured may proceed against his libeller, either by prose-

action and indictment, on the ground that such publications tend to breaches of the peace, or by action to recover damages. Formerly the legal injury was regarded as the same whether the publication was true or false—indeed, it had become an adage that “the greater the truth the greater the libel.” But by the statute 6 & 7 Vic., c. 96, it is provided, that on information or indictment the defendant may allege the truth of the matter charged, and that it was for the public benefit that it should be published; subject, however, to this condition, that if he should be convicted, such allegation might be regarded as an aggravation of the offence. He may also show that the publication was without his knowledge, and did not arise from want of care on his part. Moreover, in all such indictments or informations for libel, if judgment be given for the defendant he will be entitled to the costs he has been put to in defending himself; but if the verdict be for the prosecutor upon the special plea, the prosecutor will be entitled to the cost occasioned by such plea. Lastly, it is provided that every person convicted of publishing a defamatory libel, knowing it to be false, shall be liable to two years' imprisonment, and such fine as the Court may award; or, if it be not found that he knew it to be false, to imprisonment for any period not exceeding one year. As regards actions for libel, it was always competent for a defendant to set up as a defence that the libel was true; and the above-mentioned statute affords further protection to the editors and proprietors of periodical publications by enacting that, in an action for libel, although the defendant is unable to allege the truth of the libel, it shall be competent for him to plead that it was inserted without actual malice and without gross negligence, and that before the commencement of the action, or at the earliest opportunity afterwards, he had inserted a full apology for it in the same publication or any other selected by the plaintiff; and thereupon he shall be at liberty to pay into Court a sum of money by way of amends for the injury sustained. It is also competent for the defendant, after giving plaintiff notice of his intention to do so, to give evidence in mitigation of damages that he made or offered an apology to the plaintiff before the commencement of the action, or as soon afterwards as he had the opportunity of doing it. Irrespective of any protection afforded by statute, there are many publications which are protected from action or indictment on account of the circumstances under which they are published. These are termed privileged communications, and the defendant may obtain the benefit of their being of this character without pleading it specially, under the general plea of not guilty. Of this kind are all communications or publications made *bona fide* upon any subject in which the party communicating or publishing it has an interest or a duty towards the person he communicates with. Thus, in private matters communications respecting the character of a servant, or the solvency of a trader, are privileged; and so in public matters, the publication of a fair report of the proceedings of a Court of Justice is protected; but if it contains other libellous matters, such as comments reflecting upon the parties whose names appear in it, it loses the privilege which it would otherwise possess. There is an important distinction between the publication of the proceedings in a Court of Justice and those in a public meeting; for while the former is privileged the latter is not. Libels which may subject the authors and publishers to criminal punishment are of several kinds, such as blasphemous, immoral, seditious, and personal libels. All blasphemies against God or the Christian religion, or the Holy Scriptures, are indictable at common law, that is, by the custom of the realm. So is any publication which is contrary to public morals, decency, and order; and by 20 & 21 Vic., c. 83, a summary power is given to the police, under the direction of the magistrates, to search for obscene books, pictures, and other articles, and punishing the persons in whose possession they are found. As to seditious libels, it is the undoubted right of every member of the community to publish his own opinions on all subjects of common interest, and so long as he executes this inestimable privilege candidly, honestly, and sincerely, with a view to benefit society, he is not amenable as a criminal. Where the boundary is overstepped, and the limit abused for wanton gratification or private malice—where public mischief is the object of the act, the publication is noxious and injurious to society, and is there-

fore criminal. Personal libels consist of malicious defamation, tending either to blacken the memory of one who is dead or the reputation of one that is alive, and expose him to public hatred, contempt, or ridicule. By the statute 6 & 7 Vic., c. 96, any person convicted of maliciously publishing any defamatory libel, knowing the same to be false, may be imprisoned in the common jail for any term not exceeding two years, and be fined as the Court shall think fit; and if the guilty knowledge be not proved shall be liable to fine or imprisonment, or both; such imprisonment not to exceed the term of one year. By the same statute, if any persons shall publish, or threaten to publish, or shall offer to abstain from printing or publishing, or to prevent the printing or publishing of any libel, matter, or thing, touching any other person with intent to extort money or any valuable thing, or to obtain any appointment or benefit, such person shall be liable to be imprisoned, with or without hard labour, for any term not exceeding three years. Upon any prosecution for libel, the defendant may show that the publication was merely accidental and without his knowledge. So he may show the libel was published under circumstances which the law recognises as those of justification or excuse. By the 6th & 7th Vic., c. 96, as we have said, he may plead that the alleged libel is true; and, further, that it was for the public benefit that it should be published; but if, notwithstanding that plea, the defendant should be convicted, it is competent for the Court, in pronouncing sentence, to consider whether the guilt of the defendant is aggravated or mitigated by such plea, and by the evidence given to prove it. This provision, however, does not apply to seditious libels. The defendant may also prove that the publication complained of was made without his authority, consent, or knowledge, and did not arise from want of due caution on his part. Upon conviction on any indictment or information by a private prosecution for libel, if judgment be given for the defendant, he will be entitled to receive the costs he has been put to by the prosecutor. The question of libel or no libel is one for the jury; but the Court or Judge is required to give his or their opinion upon it to the jury, according to their discretion, which the jury can accept or reject, as they shall feel themselves bound in conscience to do.

Lift.—To lift a forme is to remove it temporarily from the press or machine and thus to suspend the process of printing, in order that another forme may be put on. In the warehouse each separate portion of printed paper, whatever the number of sheets it consists of, that is placed upon the poles to dry, is termed a lift. A forme is said to “lit” when it has been so perfectly justified and locked up that no parts of it drop out on being raised from the imposing surface. In most printing offices of moderate size a piece of machinery, styled a “lift,” is used to convey the formes from the press-room or machine-room, which is usually on the basement, to the composing-room at the top of the house. It consists of a sort of shallow box, standing on end, the front or lid of which is moveable, and lined with a blanket, so as not to injure the face of the type: into this box the forme is placed, over which the lid is fastened by a bolt. In this position, by means of a pulley, it can be raised or lowered from one floor to another as occasion requires. The saving of time and labour is great, to say nothing of the destruction of the staircase caused by the sliding of formes down it.

Ligatures.—Letters cast together on one shank. The only ligatures now in use are—

æ œ if ffi fl fi ll.

Light Work.—See EASY WORK.

Literal Errors.—Errors in letters, as distinguished from verbal errors, which are errors in words.

Literary Property.—The Act which defines and establishes property in literary productions is the Act 5 & 6 Vic., c. 45. The three leading sections of the Act are:—

And be it enacted, that the copyright in every book which shall after the passing of this Act be published in the lifetime of its author shall endure for the natural life of such author, and for the further term of seven years, commencing at the time of his death, and shall be the property of such author and his assigns: provided always, that if the said term of seven years shall expire before the end of forty-two

years from the first publication of such book, the copyright shall in that case endure for such period of forty-two years; and that the copyright in every book which shall be published after the death of its author shall endure for the term of forty-two years from the first publication thereof, and shall be the property of the proprietor of the author's manuscript from which such book shall be first published, and his assigns.—*Sec. 3.*

And whereas it is just to extend the benefits of this Act to authors of books published before the passing thereof, and in which copyright still subsists: be it enacted, that the copyright which at the time of passing this Act shall subsist in any book theretofore published (except as hereinafter mentioned) shall be extended and endure for the full term provided by this Act in cases of books thereafter published, and shall be the property of the person who at the time of passing of this act shall be the proprietor of such copyright; provided always, that in all cases in which such copyright shall belong in whole or in part to a publisher or other person who shall have acquired it for other consideration than that of natural love and affection, such copyright shall not be extended by this act, but shall endure for the term which shall subsist therein at the time of passing of this Act, and no longer, unless the author of such book, if he shall be living, or the personal representative of such author, if he shall be dead, and the proprietor of such copyright, shall, before the expiration of such term, consent and agree to accept the benefits of this Act in respect of such book, and shall cause a minute of such consent in the form in that behalf given in the schedule to this Act annexed to be entered in the book of registry hereinafter directed to be kept, in which case such copyright shall endure for the full term by this Act provided in cases of books to be published after the passing of this Act, and shall be the property of such person or persons as in such minute shall be expressed.—*Sec. 4.*

And whereas it is expedient to provide against the suppression of books of importance to the public: be it enacted, that it shall be lawful for the Judicial Committee of Her Majesty's Privy Council, on complaint made to them that the proprietor of the copyright in any book after the death of its author has refused to republish or to allow the republication of the same, and that by reason of such refusal such book may be withheld from the public, to grant a licence to such complainant to publish such book, in such manner and subject to such conditions as they may think fit, and that it shall be lawful for such complainant to publish such book according to such licence.—*Sec. 5.*

It is very important that printers should carefully observe the regulations for the delivery to the British Museum, under the Copyright Act. The following are the official directions:—

According to the provisions of the Copyright Act (5 & 6 Victoria, cap. 45), it is enacted "that a printed copy of the whole of every book which shall be published after the passing of this Act" [1st July, 1842], together with all Maps, Prints, or other Engravings belonging thereto, finished and coloured in the same manner as the best copies of the same shall be published, and also of any second or subsequent edition which shall be so published with any additions or alterations whether the same shall be in letter-press, or in the maps, prints, or other engravings belonging thereto, and whether the first edition of such book shall have been published before or after the passing of this Act, and also of any second or subsequent edition of every book of which the first or some preceding edition shall not have been delivered for the use of the British Museum, bound, sewed, or stitched together, and upon the best paper on which the same shall be printed, shall, within one calendar month after the day on which any such book shall first be sold, published, or offered for sale within the bills of mortality, or within three calendar months if the same shall first be sold, published, or offered for sale in any other part of the United Kingdom, or within twelve calendar months after the same shall first be sold, published, or offered for sale in any other part of the British dominions, be delivered on behalf of the publisher thereof at the British Museum.

Also "That in the construction of this Act, the word 'book' shall be construed to mean and include every volume, part or division of a volume, pamphlet, sheet of letter-press, sheet of music, map, chart, or plan separately published."

Also "That every copy of any book which under the provisions of this Act ought to be delivered as aforesaid shall be delivered at the British Museum between the hours of ten in the forenoon and four in the afternoon on any day except Sunday, Ash Wednesday, Good Friday, and Christmas Day, to one of the officers of the said Museum, or to some person authorised by the Trustees of the said Museum to receive the same; and such officer or other person is required to give a receipt in writing for the same.

By another clause in the Act a penalty of a sum not exceeding £5, besides the value of the copy which ought to have been delivered, is imposed for every default in delivering books pursuant to the Act.

Publications due to the British Museum under the Copyright Act are to be delivered at the Copyright Office only. No other delivery will be legal.

See also STATIONERS' HALL.

Lithography.—The art of printing by a chemical process from designs made with a greasy material upon stone. "The discovery of this art is due to Aloysius Senefelder, A.D. 1800, and rests upon the following properties of the substance forming the printing surface. 1. That a drawing made upon it with fat ink adheres so strongly as to require mechanical force to remove it. 2. That the parts of it free from the drawing receive, retain, and absorb water. 3. That a roller or other instrument being covered with fat ink, being applied to the printing surface when inked and wetted, the ink will attach itself only to the drawn parts, and will be repelled from the wetted parts. Plates of zinc have been treated by this process in the same way as stone, and the process is then called 'zincography.' By this process it will be seen that a drawing being made or an impression taken upon paper with prepared ink, and transferred by pressure to the stone, &c., the latter will form a printing surface, from which *fac similes* of the drawing or impression may be obtained by this process."* The following are the chief circumstances connected with the early history of the art of lithography. "Aloysius Senefelder produced a piece of music, his first impression from stone, in 1796. He secured a patent for it in 1800 in several German States, extending over fifteen years. It was introduced into England in 1801, and he published a work on the subject in 1817. A partnership was entered into and establishments were formed in London and Paris in 1799, but they did not succeed. Another at Munich, in 1806, was more prosperous, and the inventor was ultimately appointed to the Inspectorship of the Royal Lithographic Establishment in October, 1809. The Society for the Encouragement of Arts in London voted Senefelder their gold medal in 1819."† The stone best calculated for lithographic purposes is a sort of calcareous slate, found on the banks of the Danube, in Bavaria, the finest being found near Munich. A good stone is porous, yet brittle, of a pale yellowish drab, and sometimes of a grey neutral tint. The stones are formed into slabs from one-and-a-half to three inches in thickness. To prepare them for use, two stones are placed face to face, with some fine sifted sand between them, and then are rubbed together with a circular motion to produce the requisite granulation, which is made fine or coarse to suit the purpose of the artist. The principal agents used for making designs on stone are called lithographic chalk and lithographic ink. They are composed of tallow, virgin wax, hard tallow soap, shellac, sometimes a little mastic or copal, and enough lampblack to impart a colour to the wax. These ingredients are put into an iron saucepan, and exposed to a strong fire until the mass is in a state of ignition. When the quantity is reduced one-half, the pan is carefully covered, or put into water to extinguish the flame and cool the mixture. After being well worked up, it is formed into small cakes or sticks. The ingredients are the same in the chalk and the ink, but the proportions are varied, and a little Venice turpentine is often added to the latter. The chalk is used in a dry state, but the ink is dissolved by rubbing in water, and is used in a pen or with a camel's hair pencil. The presence of soap renders it soluble in water. The artist completes a drawing with the chalk upon a grained stone as he would make a drawing in pencil or chalk upon paper. If while in this state a wet sponge were passed over the face of the stone the drawing would wash off. To prevent this, and to make it capable of yielding impressions, a weak solution of nitric acid is poured over it, which unites with and neutralises the alkali or soap contained in the chalk and renders it insoluble in water. After this the usual course is to float a solution of gum over the whole face of the stone, and, when this is taken off, the drawing is no longer removable by the application of a wet sponge, because the

* "Abridgement of the Specifications relating to Printing." 1859, p. 28.

† Townsend's "Manual of Dates," art. Lithography.

chalk is now insoluble. The stone is now ready for the printer, who obtains impressions by the following process. Having damped the surface of the stone equally with a sponge filled with water which has been slightly tintured by acid, the printer finds that the water has been imbibed by only those parts of the stone which are not occupied by the drawing, which, being greasy, repels the water and remains dry. A roller, covered with ink, is now passed over the stone, which will not even be soiled where it is wet, from the antipathy of oil and water. But the parts occupied by the drawing, being dry and greasy, have an affinity for the printing ink, which therefore leaves the roller and attaches itself to the drawing. In this state it is said to be charged, or rolled in. A sheet of damped paper is then put over it, and the whole being passed through a press the printing ink is transferred from the stone to the paper, and the impression is obtained. Great nicety is requisite in the preparation of all the agents employed in this art, and in the process of printing, as well as in making the drawing on the stone.*

Litho-Typography.—The peculiarities of cylindrical printing have recently been applied to the purposes of lithography, and made to take impressions of figures from the flat surface of a stone with almost the same ease and certainty, and with nearly the same rapidity as it is able to produce copies from the raised surfaces of ordinary type. The ordinary rate of letter-press printing, by two pressmen, is a token, or 250 copies, per hour; but, slow as this may seem, it is express speed in comparison with the dawdling manual process of producing lithographic impressions; since a letter-press printer, at half-press, accomplishes at least his 1200 copies in a day, whereas a lithographic pressman can work off but thirty to forty prints an hour, and this is at the rate of only 300 to 400 per diem. The reason of this vast difference between the speed of the two kindred operations is, that not only are the distinct processes which have to be carried out, in order to produce a single copy by lithography greater in number than those which have to be gone through in typography, but they are each of a more delicate character, and consequently require greater care and time in the prosecution of them. The several operations which have to be gone through each time a lithographic print is produced are as follows:—

1. Inking the roller.
2. Damping the stone.
3. Inking the stone.
4. Laying the sheet on the stone.
5. Lowering the tympan.
6. Running in the stone.
7. Depressing the scraper of the press, by means of the side-lever.
8. Passing the stone under the scraper.
9. Lifting the scraper.
10. Running out the stone.
11. Lifting the tympan.
12. Removing the printed sheet.

But as the invention of the typographic machine more than quadrupled, in the first instance, the ordinary rate of production by hand, and did so merely by reducing the nine distinct operations involved in the letter-press printing to three, so the introduction of the lithographic machine has increased the speed with which impressions can be obtained nearly *twenty-fold*—the machine producing as many as 700 copies an hour, instead of only 300 to 400 a day, as by hand. The acceleration, too, has been gained partly in the same manner as the quickening of the process was effected by the first printing machine, namely, by reducing the twelve distinct operations requisite to be performed in printing lithography manually to only *three*, and this either by the omission of some of them, or the combination of others, so that two or more are executed simultaneously by the apparatus of the machine, rather than successively, as in the hand process. Every lithographic machine is made up of five distinct forms of apparatus:—

1. The damping apparatus.
2. The inking apparatus.
3. The "feeding" apparatus.
4. The impression apparatus.
5. The delivery apparatus.

Thus it will be seen that machines for lithographic purposes are composed of the same mechanical adaptations as the typographical ones, with the addition of the appliances requisite for damping the stone. But though a perfect lithographic machine requires as many as five different self-acting contrivances (some have only four, the stone being damped by hand), nevertheless, in the production of the impressions there are only three distinct operations automatically performed—the stone being damped, the roller inked, and the ink applied to the surface, as well as the impression given, with each alternate traverse of the table, as is the case with the exception of the damping, during the reciprocating movement of the ordinary typographic machines. Hence, the lowering and lifting of the tympan are both done away with, as well as the depression and after elevation of the scraper, so that four out of the twelve successive operations are dispensed with; whilst the inking the roller, damping the stone, and inking the stone, as well as running it in and taking the impression, and then running it out again, are, as we have said, made to constitute but one act performed by the simple traverse of the impression table. Hence, as the laying-on of the sheet and removing the print have each to be performed in both the mechanical and manual processes, the entire dozen operations are abridged to three, and the gain thus rendered four-fold; so that, allowing the machine to work five times as quick as a man, we can readily perceive that the rate of production mechanically must be twenty times more than it is manually. By means of the platen of the old printing-press the pressure applied to the type was perfectly flat and simultaneous—all the parts of the forme being impinged upon together, rather than successively, as in cylindrical printing; but raised surfaces alone can be printed platen-wise. It would be impossible to force the sheet to take up the ink out of the fine crevices made in a copper or steel plate engraving, or, indeed, from any device in *intaglio*, by means of a flat pressure given to every part of the surface at once. Hence, for copper-plate printing, a cylinder has to be used, in order to obtain the impression; for the pressure of this, when coated with a semi-elastic substance like blanketing, is of so searching a character, that it forces itself down into the several hollows of the surface, both as it comes to and leaves each part over which it has successively to pass—the very successiveness of the pressure serving to produce the impression. Nor could the delineation upon the flat surface of a lithographic stone be successively taken off by such flat and simultaneous pressure. In lithographic printing, the force has to be *successively* applied, as in the case of copper-plate work; but it was generally believed that, unlike that mode of obtaining impressions from the incisions or sunk parts of surfaces, it was necessary, owing to lithography being executed on a flat surface, that a certain amount of friction should be applied, evenly and gradually, to every part of the stone, one after the other, in order to obtain the impression with all the beauty and fineness of the original. Hence the scraper was always made a constituent, and for a long time was considered to be an essential portion of the process, the action of such an instrument being not only to produce successive vertical pressure, but a certain amount of friction in a horizontal direction. And it was this common fallacy as to the necessity of some such instrument being used in order to obtain perfect lithographic impressions, which formed the great impediment to the advance of steam lithographic machinery. That such a prejudice is utterly erroneous, the cylindrical machines lately constructed have demonstrated in the most practical manner, the impressions produced by them being admitted by the best printers to be fully as fine and sharp in every part as any that have been produced by means of the scraper. Indeed, it must be self-evident to all in the least acquainted with mathematics, that as a cylinder can only impinge upon a plain surface in a line, even as a circle can but touch such a line in a point, that the lithographic stone, as it passes under the impression cylinder of the machine, must have the same linear impression successively given to every part of the device delineated upon it, and that this must consequently become impressed upon the paper between it and the cylinder in the same manner as if the common lithographic hand-press had been used for the purpose; but, with the all-important exception, that little or no *friction* has been applied in order to obtain it. It is true, that as the impression cylinder of the litho-machine is

continually revolving, the stone, while passing under it, receives a vertical, linear, and instantaneous impression upon each part of it successively, rather than a continually-sliding horizontal one, such as is produced by the action of the scraper. Nevertheless, the lines, however finely drawn upon the stone, are, by the cylindrical method of printing, just as finely impressed upon the sheet; but, at the same time, the friction, which was long thought necessary for the purpose, is to a great extent done away with; and the consequence is that the device on the stone remains for a much longer period uninjured. Indeed, the litho machine, owing to the cylinder exerting a less amount of friction than the scraper on the surface, is capable of producing a far greater number of impressions from the same delineation than can be obtained by the hand-press. Indeed, the old frictional or forcible sliding method of producing impressions from lithography by means of the scraper, formed in no way an *essential* part of the process; and that, instead of adding to the beauty of the impression, it was, owing to this very friction which was thought necessary to produce it, continually destroying the fineness of the lines to which it was applied, and thus rendering the more delicate delineations on the stone of a less durable character. In fact, in the course of the experiments which were made in fitting up the lithographic machine, it was found that wherever the friction occurred—as, for instance, at those parts where the cylinder met the stone or left it—the lines were more or less injured, and that unless the cylinder were made to “hear up” at these points, fewer impressions could be taken without their betraying signs of rottenness at the upper or lower parts of the delineation—and this, whilst the finest lines in the middle portions of the subject remained absolutely unbroken. Thus it has been experimentally demonstrated that, in the old method of obtaining impressions from lithography, by means of the scraper, the horizontal friction, so far from being of service in the process, was really a serious drawback to it; and that the *successive vertical pressure* exerted by this part of the lithographic press was all that was needed—the continual scraping of the surface of the stone tending, on the other hand, gradually to destroy the sharpness of the impression, and proportionately to reduce the number of copies which could be yielded by it. But by the cylindrical method of printing, on the contrary, the successive vertical pressure being retained, and the horizontal friction removed, a far greater number of prints could be produced from the one delineation; and this merely because, owing to there being little or no friction upon the lines drawn upon the stone, such a mode of printing serves to keep them in their original integrity, and thus enables them to yield at least double or treble the numbers of copies which could be obtained by the old frictional method. The first successful lithographic machine was introduced about eighteen years since. This, as was the case with the typographic machine, was the invention of a German—one named Siegel, and it is now in use.*

Locking-up.—Fastening a forme in the chase by means of quoins (*q.v.*). The quoins should first be pushed as far as possible with the fingers. Then by the aid of the mallet and shooting stick they should be gently driven along, those against the foot-stick first, and then those against the side-stick. The several quarters of the forme should be partially tightened before either quarter is finally locked-up, otherwise the cross-bar may be sprung. The entire forme should be gently planed all over the face before being locked-up. If this be carefully done, a second planing is hardly necessary, providing the justification is perfect and the pages are all of the same length. But as this is seldom the case, the second planing can hardly be dispensed with. It often happens that the quoins, when locked-up wet, so stick to the furniture as to render it troublesome to unlock them. In such cases drive the quoin up a little more, and it will unlock with ease. Before lifting a forme, after it is locked-up, raise it gently a short distance and look under it, to ascertain whether any types are disposed to drop out. If all is right, carry it to the proof press.

Logotypes.—Types consisting of two or more letters, and forming either complete words or merely syllables, &c. They

are intended to save the trouble of the compositor, for instead of lifting the word *and* in three letters, if cast as a logotype, he picks it up as one. Earl Stanhope, among other innovations, proposed to introduce eight new logotypes, believing that their regular and frequent occurrence would expedite the process of composition in a very considerable degree, for in twenty pages of “Enfield’s Speaker” the logotypes would save to the compositor no less than 3,073 lifts, viz.:—

th	in	an	re	se	to	of	on
771	441	413	385	291	279	264	229

Johnson’s *Typographia* states that this system was actually tried at the *Times* office, but it was soon abandoned, as it was found that the hands could get through more work by the old process than by the proposed improvement. The scheme was soon almost forgotten, but in 1859 the subject of logotypes again received attention. In that year Messrs. J. V. Collignon & Louis George took out Letters Patent for “Improvements in Typography.” In their specification, after observing that if all the letters were connected two and two, the operation of composing “would be shortened one-half, and by one-third and even three-fourths with elements composed of three or four letters;” and that the formation of logotypes had hitherto been attended with great cost for punches and matrices, besides the risk of loss from one letter being battered, the patentees say, “Consequently we have sought an application for our improved system by other means than that of casting, and have succeeded in discovering a ready and efficient method of uniting several letters together. Hence, all the difficulties in the way being overcome, our brevity may be applied to all kinds of printing, which is to composition what mechanical power is to printing. According to our invention, we cold-solder letters together placed in juxtaposition, and which consists in coating a letter throughout its surface with any metallic solder to cause it to adhere to another letter, and so to form a whole. By this means a defective letter may be unsoldered and replaced by a good one, or those used that remain. This soldering preferably consists of—

Mercury	75	} 100."
Bismuth	...	...	10
Fine pewter	...	...	10
Regulus of Antimony	...	...	5

Mr. George obtained, two years later, provisional protection only for “Improvements in the method of soldering together two or more printing-type letters, to facilitate the work of the compositor, and the arrangement of type-cases for the same.” The letters are soldered with the following composition, used cold:—

Mercury	...	...	...	$\frac{3}{4}$
Fine Tin	...	...	...	$\frac{3}{4}$

The two must be mixed well together. “The solder is put on a plate of lead, and the broad side of the type is rubbed thereon, and the composition is afterwards done as usual, the solder becoming quite rigid at or about the expiration of half-an-hour.” The combined letters stated to have been found of most value are—

be	com	con	ent	ion	in
for	ge	ing	ld	me	the
and	th	ve	al	re	os

In the same year (1861), Mr. A. B. Bailey obtained provisional protection for “An improved system of combination of types, and an improved case for containing the same.” The boxes in the case shown in the drawings are so arranged that all the combinations commencing with the same letters are in the same column. The columns may be either vertical, horizontal, or diagonal. The latest logographic system with which we are acquainted is that of Mr. W. H. Wilkinson, of Massachusetts, which was patented in 1868. It was tried in one of the largest printing-offices in London for the composition of a weekly periodical, and is, to some extent, in operation at the present time. The invention relates to the combined use of types consisting of words or parts of words, together with the ordinary letter or single character types. Words, roots, and parts of words, such as constitute a very large proportion of ordinary matter, are made up into types cast whole, or formed of letter-types united; these word-types are tabulated and arranged in cases

* “Trades and Manufactories of Great Britain.”

in the order of their relative importance or frequency of recurrence. "A set or series of cases or boxes is arranged partially around a central point occupied by the compositor, and divided into compartments for containing the types, which are arrayed in tables so that their relative positions may be easily discerned by the eye; the said tables are placed strictly in the order of their relative values as calculated from the average number of words usually contributed by each table in the matter of composition, and each table is arranged in relation to the central point where the compositor stands, in such a position as to be accessible to his right hand in proportion to its comparative value." The ordinary letter-types, numerals, and other similar types, occupy the compartments of the cases at the left hand of the compositor, the rest of the space being occupied by the logotypes. The tables themselves are arranged with reference to their being learned step by step and used as auxiliary to the letter-types, until the compositor acquires the use of enough words to constitute the larger proportion of his work; these word-types then become the main feature in the system, the letter-types being only used as auxiliary.—See "An Address to the Public," by John Walter, showing the great improvement he has made in the art of printing by Logographic Arrangements; stating also the various difficulties and opposition he has encountered during its progress to the present state of perfection. London: 1789, 8vo., pp. xiii. 88. Also, "Tobitt Combination Type, their History, Advantages, and Application," by John H. Tobitt. New York: 1852, 8vo. "Miscellanies in Prose and Verse, intended as a Specimen of the Types at the Logographic Printing-office." London: J. Walter, 1785, 8vo., pp. xxiii. 225. "Logography." London: 1783, 8vo.—See also "THE TIMES."

Long Accent.—A short horizontal line placed over certain vowels, as—

ā ē ī ō ū

Long Cross.—The long bar in a chase divided for octavo, &c. It is also the narrowest.

Long Letters.—Letters which fill the whole depth of the body, and are both ascending and descending, such in the Roman as Q and j, and in the Italic *f*.

Long Pages.—Pages of more than the proper length. Before fastening in the quoins the compositor should carefully ascertain whether the pages of each quarter are of the same length; for even the difference of a lead will cause them to hang. To test their exactness, place the ball of each thumb against the centre of the footstick, raising it a little with the pressure, and if the ends of both pages rise equally with the stick it is a proof they will not bind. A similar plan should be adopted in locking-up newspaper pages, as regards the columns.

Long Primer.—A size of type between Small Pica and Bourgeois, the body of which is equal to two Pearls. The following are the equivalents to the foot, according to the different standards:—

Caslon, 89; Figgins, 90; Reed & Fox, 92; Patent Type Founding Company, 90.

The Germans call this letter *Corpus*; the French *petit romain*.

Loose Justifying.—The practice of insufficiently spacing the lines in the stick, thereby making them loose.—See JUSTIFICATION.

Low Case.—A case which is short of its proper complement of type; in which the quantities in the different boxes are *low*.

Lower Case.—The case which stands beneath the Roman case, in a pair of cases. It holds the small letters, double letters, points, spaces, quadrats, and other sorts, according to the "lay" adopted. These sorts are accordingly called *lower-case sorts*.

Low in Line.—When the face of a type does not range nicely with its fellows, but is lower, it is called "low in line," in contradistinction to a letter being higher than others in a line, when it is termed "high in line."

Low to Paper.—When the impression of a type does not appear distinctly, from not being of the same height as the body

of a page or line, it is termed "low to paper." This is caused sometimes by the typefounder's dresser planing too much off the foot of a stick of type; it is also observable when new sorts are mixed with an old fount, the new sorts being, in that case, "high to paper."

Lug.—When the roller adheres closely to the inking table and the type, through being green and soft, it is said to *lug*.

M.

Machine.—In England, a press in which the operation of laying-on the sheet, inking the forme, and effecting the impression, among others, are automatically performed, is called a machine; although, to speak correctly, every press is a machine, and every printing machine is a press, as is said in America. We shall, for convenience sake, adopt the distinction conventionally observed, and speak of presses separately from machines. The invention of machines has given an impetus to the progress of the art of printing, and has thereby accelerated the diffusion of knowledge to an extent which cannot be contemplated without a feeling of amazement. By the use of machines, sheets of paper can be printed of a size which could not possibly be obtained on a press worked by hand, and at a speed which, compared with that of the hand-press, is as that of the express train to the tortoise. Several persons lay claim to the honour of having invented the first machine, or of adapting the cylinder principle to the impression of paper by raised characters. We shall not endeavour to set at rest a question so vexed, and our descriptions of the different machines will be taken direct from the records of the Patent Office, and be given strictly in chronological order. We ought to mention, at the commencement, that Savage, in his excellent "Dictionary of Printing," treats machine printing as synonymous with cylindrical printing, which it is not, for platen machines are certainly not presses. The only distinction which can be logically drawn is that we have alluded to above—the fact of certain operations being effected automatically. The inventions patented in Great Britain of this class come under certain heads, as follows, according to the shape of the cylinders and the surface pressed by them:—

- I. Flat-forme pressing-cylinder.
- II. Flat-forme conical pressing-roller.
- III. Prismatic-forme pressing-cylinder.
- IV. Cylindrical-forme (convex) pressing-cylinder.
- V. Cylindrical-forme (convex) flat pressing-surface.
- VI. Cylindrical-forme (concave) pressing-cylinder.
- VII. Flat-forme pressing flat surface.

It is undoubtedly the fact that the first suggestion on the records of the Patent Office, for the employment of the cylindrical principle in typographic impression, is due to William Nicholson, who, in 1790, obtained Letters Patent for "a machine or instrument on a new construction, for the purpose of printing on paper, linen, cotton, woollen, and other articles, in a more neat, cheap, and accurate manner than is effected by the machines now in use." The first clauses refer to the fabrication of types. These types, imposed in chases of wood or metal adapted to the surface of a cylinder, are fastened "to the said surface by screws or wedges, or in grooves, or by other means well known to workmen." "Blocks, formes, types, plates, and originals," are likewise fastened on the surface of cylinders "for other kinds of work." The ink is furnished to the printing surface by a "colouring cylinder," covered with "leather, or the dressed skins which printers call pelts or * * * with woollen, or linen, or cotton cloth," and stuffed with horsehair, wool, or woollen cloth, defended by leather or oilskin." Distribution is effected by two or three small rollers applied "longitudinally against the colouring cylinder, so that they may be turned by the motion of the latter." If the colour be thin, a ductor of wood or metal, "or a straight brush, or both of these last," are applied to the colouring cylinder. Colour is applied "to an engraved plate or cylinder or * * * through the interstices of a perforated pattern (or cylinder)" by "a cylinder entirely covered with hair or bristles in the manner of a brush." The material to be printed (damped, if necessary) is passed "between two cylinders or segments of cylinders in equal

motion," one having the printed surface imposed, and the other "faced with cloth or leather * * * so as to take off an impression of the colour previously applied." * * * Or, the printing surface, previously coloured, is passed in contact with the material wrapped round a clothed cylinder, or the clothed cylinder with the material round it rolled over the printing-surface "previously coloured." Or, the printing-surface, coloured by a colouring-cylinder, rolls along the material "spread out upon an even plane." This process is applicable to books and every other flexible material. The drawings represent:—1. A press in which the type-table passes between an upper and lower cylinder, the former (clothed) acting upon the table "by means of cog-wheels or straps, so as to draw it backwards or forwards by the motion of its handle." A box containing the inking-roller, with its distributors above it, is supported by an arm from the head of the machine. On the end of the type-table is an "ink block," and upon it a vibrating roller which, by the action of a bent lever, "dabbs against one of the distributing-rollers and gives it a small quantity of ink." The tympan, which opens sideways, with paper on it, is laid upon the forme when it arrives between the inking roller and machine-head. After the impression, the workman on the other side of the cylinders "takes off the sheet and leaves the tympan up." II. A printing cylinder has (gearing with it) a pressing cylinder below and a colouring cylinder above, the latter being provided with distributors as in I., and furnished by a vibrator from a trough. A sheet of paper is applied to the surface of the pressing cylinder where it is retained by points "in the usual manner," or by the apparatus in IV. The machine is uniformly driven in one direction by hand power applied to the printing cylinder. Another drawing represented a pressing cylinder and inking roller, with distributors, rigidly united and geared into a rack on a long table divided into four parts. The sheet is laid down on the former (two modes by which "the paper is taken up and laid down" are specified) at 1; the impression is received at 2; the sheet discharged at 3; and then the cylinder returns (clearing the forme by a peculiar contrivance) to 1. The specification ends thus:—"I must take notice that in these and every other of my machines, as well as in every machine whatever, the power may be wind, water, steam, animal strength, or any other natural echange capable of producing motion."* Such was undoubtedly the first suggestion for the application of the cylindrical principle. Savage ("Dictionary," p. 461) gives some particulars concerning Nicholson himself. It appears that he published a number of works on scientific and practical subjects, and conducted *Nicholson's Journal of Science, &c.* He kept a large school in Soho-square; and, in addition to his other multifarious pursuits, was an agent for a nobleman, whose sudden death left him in difficulties from which he could never extricate himself. It does not, however, appear that his plans and experiments ended in any actually practical results. The accomplishment of this revolution in our art is due to a young Saxon, M. Koenig, a printer by occupation, who conceived it possible to print by steam, though at first he expected no more than to be able to give accelerated speed to the common press, to which end his first efforts were bent. The *Literary Gazette*, Oct. 26, 1822, gives some interesting particulars of this man; and still more recently, *Macmillan's Magazine*, 1869, p. 135, has called attention to him, in a most interesting article written by Mr. Samuel Smiles. Koenig arrived in England in 1806. He was compelled to work at his trade for a time, but he lost no opportunity of bringing his great idea under the notice of master printers likely to take it up. After meeting with numerous rebuffs and disappointments, he at last found what he was in search of—a man of capital willing to risk his money in developing the invention, and bringing it into practical operation. This was Thomas Bensley, a leading London printer, with whom Koenig entered into a contract in March 1807, to accomplish his proposed printing machine; Bensley, on his part, undertaking to find the requisite money for the purpose. Koenig then proceeded to mature his plans, and construct a model machine, which occupied him the greater part of three years, and a patent

was taken out for the invention on the 29th of March, 1810. Steps were next taken to erect a working model, to put it to the test of actual practice. In the meantime Koenig had been joined by another ingenious German mechanic, Andrew F. Bauer, who proved of much service to him in working out its details. At length, in April 1811, the first printing machine driven by steam-power was constructed and ready for use; and the first work it turned out was sheet H of the "Annual Register" for 1810, which it printed at the rate of eight hundred impressions an hour,—being the first sheet of a book ever printed by a machine and by steam-power. In this first machine of Koenig's, the arrangement was somewhat similar to that known as the "platen machine;" the printing being produced by two flat plates, as in the common hand-press. It also embodied an ingenious arrangement for inking the type. Instead of the old-fashioned inking balls, which were beaten over the type by hand, several cylinders covered with felt and leather were employed, these forming part of the machine itself. Two of the cylinders revolved in opposite directions, so as to spread the ink, which was then transferred to two other inking cylinders alternately applied to the forme by the action of spiral springs. This platen machine of Koenig's, though it has since been taken up anew and perfected, was not considered by him to be sufficiently simple in its arrangement to be adapted for common use; and he had scarcely completed it when he was already revolving in his mind a plan of a second machine on a new principle, with the object of ensuring greater speed, economy, and simplicity. By this time two other well-known London printers, Mr. Taylor and Mr. Woodfall, joined Bensley and Koenig in their partnership for the manufacture and sale of printing machines. Koenig, thus encouraged, proceeded with his new scheme, the patent for which was taken out on October 30th, 1811. The principal feature of this invention was the printing cylinder in the centre of the machine, by which the impression was taken from the types, instead of by flat plates as in the first arrangement. The forme was fixed on a cast-iron plate which ran to and fro on a table, being received at each end by strong spiral springs. The other details of the specification included improvements in the inking apparatus, and an arrangement for discharging the sheet on the return of the forme. A double machine on the same principle was included in this patent. Two other patents were taken out in 1813 and 1814,—the first of which included an important improvement in the inking arrangement, and a contrivance for holding and carrying on the sheet and keeping it close to the printing cylinder by means of endless tapes; while in the second were introduced the following new expedients: a feeder consisting of an endless web, an improved arrangement of the endless tapes by employing inner as well as outer friskets, an improvement of the register by which greater accuracy of impression was secured, and finally an arrangement by which the sheet was thrown out of the machine, printed on both sides. Before, however, these last-mentioned improvements had been introduced, Koenig had proceeded with the erection of a single-cylinder machine after the patent of 1811. It was finished and ready for use by December, 1812; and it was then employed to print the sheets G and H of Clarkson's "Life of Penn," Vol I., which it did in a satisfactory manner, at the rate of eight hundred impressions an hour. When this machine had been got fairly to work, the proprietors of several of the leading London newspapers were invited to witness its performances—amongst others, Mr. Perry, of the *Morning Chronicle*, and Mr. Walter, of the *Times*. Mr. Perry would have nothing to do with it, and would not even go to see it, regarding it as a gimerack; but Mr. Walter, who had long been desirous of applying machinery to newspaper printing, at once went to see Koenig's machine on the premises in Whitecross-street, where it had been manufactured and was at work. He had before had several interviews with the inventor on the subject of a steam-press for the *Times*; but determined to wait the issue of the experimental machine which he knew to be in course of construction. A glance at the machine at work at once satisfied Mr. Walter as to the great value of the invention. Koenig having briefly explained to him the working of a double machine on the same principle, Mr. Walter, after only a few minutes' consideration, and before leaving the premises, ordered two double machines for the printing of the *Times* newspaper. In Nov., 1814,

* Specification, 1748. Abridgment, i. 97. The specification and drawings are reprinted in full in "Savage's Dictionary of Printing," p. 449. See also "Repertory of Arts," Vol. V., p. 145.

By the time your stick is full you will have twenty lines of, say, fifty letters each, or one thousand in all, all set by fifty movements of the hand, *i.e.*, by emptying fifty brasses. To be useful, the twenty duplicates are put on to twenty different galleys, and form the first lines of twenty columns. It will be seen that the reading is very easy, any wrong letter being instantly visible. The distributing is done by reversing the last operation, and a "slicing" machine slices each row upon its own brasses—in rows of M's, a's, and e's, ready for further use. Mr. Mackie invented this system in order to supply duplicate columns to various newspapers, and for setting handbills, labels, short telegrams, &c. It may be of much use, as Mr. Mackie supplies all the mechanism required for £20. The exact cost of setting, reading, and distributing twenty columns was 1s. 4½d. per column.

Mackle.—When part of the impression appears double. If the frame of the tympan rubs against the platen it will inevitably cause a slur or mackle. This is easily remedied by removing the obstacle so as to clear the platen. The joints or hinges of the tympan should be kept well screwed up, or slurring will be the consequence. When the thumb-piece of the tympan is too long it always produces a slur: this can be prevented by filing off a part of it. Loose tympan will at all times slur the work, and great care must therefore be taken in drawing them perfectly tight. The paper drying at the edges will also slur: this may be remedied by wetting the edges frequently with a sponge. Slurring and mackling will sometimes happen from other causes; it will be well in such cases to paste corks on the frisket, or to tie as many cords as possible across it, to keep the sheet close to the tympan.

Make.—In casting-off copy or matter it is said that it "makes" so much—a galley, a stickful, &c.—that is, it occupies so much space.

Make Even.—When a long paragraph is divided into more than one taking of copy, the compositor setting the first portion is told by the one that follows him to "end even." If, however, he cannot conveniently do so, he has to "make even" by over-running a few lines of the second take.

Making Margin.—Arranging the pages so that each may occupy one side of a leaf and have the proper proportion of white paper left at the sides as well as at the head and foot. The page, when printed, should be a little higher than the middle of the leaf, and have a little more margin on the outside than in the back. The methods now resorted to are as follows:—For a half-sheet of 8vo., dress the chase with suitable furniture, and fold a sheet of "its own" into the 8vo. size. Place the back of the paper on a level with the ends of the lines of the 8th page, and let it extend a Pic em beyond the outer edge of page 1; if no wider than the rest, this will give a proper margin to the back, and allow one em for cutting; now open the paper to a 4to., and place one edge against the ends of the lines of page 7, and let it extend to, and not beyond, the outer edge of page 1, taking care that the furniture is equally divided on each side of the short bar. Having in this manner made the margin to the *breadth* of the paper, now proportion it to the *length*, by trying whether the depth of the paper, folded in 8vo., will extend from the folio of page 8 to the bottom of page 5, including the white line, having the furniture equally proportioned at heads each side the long bar. This quarter may now be considered as right, and the others may be adjusted exactly the same. The furniture for the *sheet* is also furnished in the same manner. In making margin always take care that the gutter-sticks be of a proper breadth, which may be tried by holding one end of the paper folded into 4to. to the centre of the groove in the short cross, to observe whether the fold for 8vo. falls in the middle of a gutter-stick; if it should, it will prove the gutter to be correct. The margin of 12's and other sizes may be made in the same manner; for, having carefully folded a sheet of paper intended for the work, one quarter may be first dressed, and the margin adjusted before proceeding further; for if the folding falls in the centre of the respective parts of the furniture it proves that the margin is right throughout. Having made the proper margins, nothing remains but to fit the side and foot sticks and quoins,

and lock-up the formes, observing well that every page stands square to ensure a true register. In imposing jobs, where two or more of the same size requiring equal margins are to be worked together, fold the paper to the size appropriate for each, and so arrange the type that the distance from the left side of one page to the left side of the adjoining one shall be exactly equal to the width of the folded paper, as before described.

Making-ready a Forme.—Preparing it for printing—one of the most important of the pressman's duties. We shall first describe the best method for making-ready on the machine, and then on the press. Our information on the first head is founded chiefly on materials supplied by Messrs. R. Hoe & Co. We believe that no English Manual has hitherto treated of this subject, which, indeed, is apparently regarded as one of the "mysteries" of the art.

Make clean the bed of the machine and the impression segment of the cylinder. Adjust the bearers a trifle above ordinary type-height. See that the impression screws have an even bearing on the journals, and that the cylinder fairly meets the bearers. Select a suitable tympan or impression surface. This tympan may be india-rubber cloth, a thick woollen lapping cloth or blanket, several sheets of thick, calendered printing paper, or one or more smooth and hard press boards. Each of these substances has merits not to be found in any other. Upon the proper selection of the tympan the machine work in a great measure depends, and care should be taken in making the choice.—*See* TYMPANS.

Whatever be the material selected, it must be stretched very tightly over the cylinder. All labour in overlaying is but thrown away if this be not carefully attended to. A rubber or woollen blanket can be secured at one end of the blanket by small hooks projecting inward, and laced tightly with saddlers' thread at the other end; or, by sewing on that end of the blanket a piece of canvass, it may be wound tightly around the reel and kept secure by the pawl and ratchet. Paper and press-boards require a different process. Take a piece of Nonpareil cherry reglet of the full length of the cylinder. Trim down the paper or press-board to the width of the bed between the bearers, but leave it a little longer than the impression segment of the cylinder. Then crease the press-board at a uniform distance of half an inch from the narrower end, and lay this creased part on the flat edge of the impression segment of the cylinders under the grippers. Put the reglet over this and bring down the clamps firmly on the reglet so as to bind all securely. When this is done, a thin web of muslin may be stretched over the whole in the same way in which a blanket is laid on, and rolled up tightly, which will prevent any slipping of the board or of the overlays that may be pasted on it.

The regulation of the margin is the next process. Although type can be printed from any quarter of the bed, it will be found most convenient to lay all formes close to the back part of the bed, and midway between the bearers. This will secure a good impression, give a fair average margin to every forme, and allow the full use of the bed for a large forme, without resetting the cylinder. The bed and cylinder travel together, and the grippers, which bring down the sheet to the forme, should barely lap over the back part of the bed. So long as the toothed cylinder-wheel, and the short toothed rack on the side of the bed remain undisturbed, the grippers will always pass over the bed in exactly the same place. When the grippers are in this position, slightly lapping over the side of the bed, measure the distance between the back edge of the bed and the point of one of the nearest grippers, and with a piece of reglet cut a gauge exactly corresponding to this measurement. Let no forme be laid upon the machine until the space between the type and the edge of the chase tallies with the gauge. This will prevent the grippers from closing on the forme and crushing it. If the chase will not admit of so wide a margin, or if an extra margin is wanted on the sheet, put a piece of furniture of the extra width behind the chase. The margin can thus be increased or diminished at pleasure.

A book forme may be locked up in a chase so large and with the type so far from the frame that the grippers will bring down the sheet in such a position that it will be printed with the margin all on one side. To remedy this, the cylinder must be re-set. Proceed thus: remove the screw and washer at the end of the cylinder-shaft, and draw the intermediate wheel out of gear; loosen screws in the gauge rack; then turn the cylinder to the point required, connect the intermediate wheel, adjust the gauge rack, and screw up tight.

The machine having been adjusted, next examine the forme to be printed. Not only see that it has been gauged correctly, but also that it is not locked up too tightly, that chase, quoins, letter, and furniture are all level and lie flat upon the bed. If the forme springs, the

quoins must be slackened; if this loosens the type too much the justification should be amended. Make clean the type by rubbing it over with a dry brush. The rollers are often made foul and the colour of the ink changed by dust and particles of dirt clinging to the type.

Fasten the forme so securely on the bed that it will not be moved by the action of the cylinder or the rollers. Take a proof on its own paper, using very little ink. Adjust the drop guides so as to bring the sheet exactly in the right position. Push out the iron tongues at the edge of the feed-board at equal distances from each other, so that they will sustain the paper evenly. Slide the drop guides along the rod, until they fall squarely over the tongues. Set the side guide so that it will give a true margin in length to the sheet to be printed. Adjust the grippers so that they will seize the sheet at proper intervals, making the margin exactly even by lengthening or shortening the drop guides. Then take a clean proof on its own paper, exactly in the right position, before making-ready, and show it to the reader. It often happens that an error in the margin, or an imperfection in the register is thus noticed, and its timely discovery and correction before overlaying will save much time and trouble. A readable proof may be taken before overlaying by running through a sheet or two of thick proof paper. Make register, if it is a book forme, before overlaying.

When everything has been found correct, then proceed to regulate the impression. If the type is fair the proof should show a decently uniform impression. But if the forme is large, or if it contains old and new, or large and small type, then the proof will show an uneven impression. To rectify this inequality, three expedients are in use:—

1. Lowering the bearers and putting on more impression. This is a very poor way, for it wears down new type in order to show the face of the old, and invariably produces thick and coarse press-work.

2. Raising the low type to proper height by placing thicknesses of paper under them, which is called Underlaying.

3. Giving additional thickness to the tympan over such parts of the forme as show a weak impression, which is called Overlaying.

It is seldom that any one of these methods will prove sufficient; all should be used together. When the larger part of the proof-sheet shows a weak impression, approaching illegibility, then more impression should be added. When one side of the proof-sheet shows a weak impression, while that on the other side is full and clear, the more impression should be given to the pale side. The impression should be made decently uniform before any attempt is made at overlaying or underlaying. But the bearers should follow the impression screws, both being raised and lowered together, in order to secure the type from the unimpeded force of the impression cylinder. The bearers should be of even height, and the cylinder shaft should always revolve on a true level. If the impression screws are carelessly used, and the bearers are rashly raised and lowered, this even bearing will soon be lost; the difficulty of obtaining a good impression will be much increased, and the machine will receive a serious injury. For the same reason the bearers should never be packed with cards, as is usual on a press, for it strains the cylinder and all its bearings with an irregular resistance. The bearers should be tampered with even less than the impression screws. When the latter are so set that the cylinder gives a fair, uniform impression, they have done all that can be expected, and nothing more should be attempted with them. Sometimes the proof may show that one cut, or a line of type, or a set of brass rules is higher than any other material in the forme. The impression should be set regardless of this; it will be found quicker and neater to reduce the impression on one or two such high lines by cutting out the tympan sheet over them than it would be to underlay and bring-up all other types to such irregular height. Adjust the impression so that it will face the larger portion of the type, and make the less conform to the greater. Those parts which are high must be cut out of the tympan, those which are low should be raised by underlays; the inequalities should be smoothed by overlays.

When any part of the forme is low, it will not answer to attempt facing it with overlays; it must be brought up to meet the inking rollers, as well as the impression cylinder. In such case, cut out an impression of the forme where it is illegible, and then paste it to the bottom of the type. If some types are high and some are low, make proper distinction, and carefully avoid increasing the height of any type or rule which seems to have a full impression. Pursue the same course when a marked depression appears in the centre or a fading impression at the edges. Cut out that section which is light and paste it under the defective part. If the impression grows faint in any part, the underlays must be cut of irregular thickness to suit the fading away of the impression. Cut out an underlay from the edge where the impression begins to be light; then cut another of smaller size where it is quite illegible; paste one over the other, laying them

carefully in their proper positions, and then paste them all on the bottom of the forme where it is needed, taking care to lay the smallest underlay nearest the bed. This will restore the type to a proper level, and the next forme should show a uniform impression. The same plan will answer for a low corner. Use as little paste as possible, thin and free from lumps. Be careful that the underlays are put on smoothly, without fold or wrinkle. Cut them all from a proof, which serves as a guide both in cutting and affixing to the forme.

Underlaying should not be practised to any great extent upon a cylinder machine. It is a valuable means of bringing up an old line of type, a hollow or a low corner. The underlays of any type forme should not constitute more than one-fourth of the surface; if more than this is attempted, they rarely fail to work up the quadrats and furniture. The action of the quick-moving cylinder upon a forme of type underlaid with yielding paper, will create a springing and rocking of all the materials in the chase.

Of all materials, old stereotype plates need underlays most, as they are usually quite irregular in height. Thin card or pasteboard will be found preferable to paper for the underlaying of plates secured on wood bodies. When the plates are on patent blocks, always underlay between the plate and the block. Always cut the underlay for a plate less in size than the faint impression would seem to require; this will allow for the spring of the plate.* If it is cut of full size, the next impression will disappoint the pressman by being much harder at the edges than he intended. Never attempt to build up a type-forme to a proper impression entirely or chiefly by underlaying.

Underlays should be put under all large and bold-faced types, when used with much smaller types, so as to raise them above the level of the others. This is needed to give the forme closer rolling, extra supply of ink, and that extra force of impression to transfer the ink to paper which all large type requires. When the type has been so levelled by underlays that all parts receive proper bearing from the inking-rollers, and when the cylinder has a correspondingly even impression, then overlaying may be commenced. For ordinary news-work, posters, or job-work, overlaying may be entirely unnecessary. But fine press-work cannot be done without overlays. Underlays are chiefly valuable for securing an even impression, while overlays are indispensable for the giving of delicacy and finish.

To overlay a forme properly, the tympan should be covered with a sheet of thin, smooth and hard paper, stretched tightly. Then take a pale impression on the tympan sheet, and also run through the machine two or three proofs on thin and hard paper. Examine the proofs carefully on face and back. If any brass rules or letters appear too high, cut them out of the tympan sheet in one or two thicknesses, as their varying height may require. Go over the whole proof, examining every line carefully, and by cutting out reduce the impression on all projecting letters to an uniform standard. For this, as for all other work on overlays, use a sharp knife with a thin point, and cut on a smooth surface, so that there will be no ragged nor torn edge to the cut.

The next step should be to raise the impression of those parts of the forme where the type appears dull or weak. Cut out carefully and paste the overlays smoothly upon the tympan. Overlays are worse than useless if they are not laid on firmly and neatly, as the slightest bagginess will cause them to slur or mackle. If, by accident, the tympan sheet should bag or wrinkle, tear them off and commence anew.

Cut out and overlay the more prominent parts first. Then try another impression, and from that cut out new overlays for minor defects. Thus proceed until a perfectly smooth and even impression is obtained.

With common work it will be sufficient to cut overlays in masses, as pages or parts of pages, but with fine work every line and letter needs examination, and letters and parts of single letters are often overlaid by careful workmen. When the pressman is expert at making-ready, it is not necessary to take a new impression with every successive set of overlays. Many pressmen take a dozen proofs of a forme on different styles of paper, and proceed to cut out, and overlay on one of the proofs, and finally paste this proof on the tympan. But this boldness and precision can be acquired only by long practice. It is better for the young pressman to feel his way step by step.

At Press, the term Making-ready a Forme includes: laying the forme on the press, fixing it in its place, placing the tympan sheet on the tympan, adjusting the points to make register, when

* The springing of plates would be almost entirely avoided by the use of the new blocks invented by Mr. Tickle, a description of which will be found in alphabetical order.

both sides of the paper are to be printed, making register, preparing the frisket, and producing an equal impression from all the pages and from every part of each page. The following directions, extracted from Mr. Houghton's "Printers' Every-day Book," are the most complete we have seen, after carefully comparing nearly every other printed work on the subject. Their importance and utility warrant us in giving them *in extenso*:

The first thing in making ready a forme is, that it be exactly in the centre of the press-table and platen, so that the piston, to which the platen is screwed, will fall perfectly in the centre of the forme, when the bar handle is pulled. To do this is very easy; it only being required to put the forme the same distance from the tympan as it is from the edge of the press-table next the platen; to the nick on the front edge of which it is to be adjusted. This done, fasten the forme on the press-table. If it be a small one, and no rack-chase for making-ready at hand, it may be done with two empty folio, quarto, or octavo chases, according to its size, by putting one on each side and locking it with quoins against a sidestick. If it be a large one, quoins only will be necessary to fasten against the side irons.

The forme being fastened, the tympan sheet is laid on it, and adjusted as near the centre as possible, when the tympan is damped a little, to make the sheet stick, and then pulled. The corners of the tympan sheet thus brought up from the forme, are then pasted fast to the tympan, and such blankets put into the inner tympan as will suit the nature of the forme. For instance, if it be an ordinary job, jobbing-blankets are used, but if a half sheet or a sheet of twelves, blankets of a finer texture are used, or, perhaps what is as good, a few sheets of paper.

Thus far, if the mere folding of a sheet before it is laid on a book-forme be excepted, in making-ready all formes are alike, but how they should be proceeded with must depend upon circumstances. If the job to be worked be only an ordinary one, by putting on and cutting out the frisket (which should be previously pasted), a little overlaying, and regulating the pull, it will be ready to go on with. But if the forme be a half-sheet or sheet of book-work, a little more care is necessary, and requires one or two things to be done before it is ready to go on; such as putting on the points, getting register, in-laying, &c. Suppose, for example, the forme be a half-sheet of twelves, the tympan-sheet of which, after being folded into sixes, and laid by the creases to the long and short crosses and pulled, is pasted on the tympan as above. The proper blankets intended for use also being in their place, a pair of twelves points, which differ from those used for octavo, quarto, &c., are screwed exactly on the upper crease of the tympan sheet, so that the spurs of the points will be at equal distances from the outer edge of each side of the impression, and fall in the groove of the thick cross-bar of the chase. As these points are required to be exactly of a length, it is best to measure both from the spur to the outer edge of the impression on the tympan-sheet, and adjust them to each other accordingly. If this be properly done, and the furniture in the forme be exact, the register will also be exact with little trouble. The points being adjusted, pull, before the frisket is cut out, a slip-sheet or set-off sheet, without rolling, and back it, by putting the hole made by the near point on the off spur, and that made by the off point on the near spur. If the register be not good, make it so, by altering the points, or moving the forme a little to suit the necessity of the case; or by slacking one square, and locking up the opposite one tighter, which may, perhaps, do better than either. Having now got register, take an impression on the frisket, which has previously been covered, and cut it out with care. The advantage of getting register of a half-sheet before the frisket is cut out, is, that it obviates the probability of having again to cut the frisket for bites, which is a necessary consequence if the forme be moved to get register after the frisket is once cut. It is now necessary to examine the impression; for this purpose another slip-sheet is laid exactly to the tympan-sheet and pulled, and the impression examined accordingly. This sheet will, perhaps, exhibit places where the impression is more or less heavy. Cutting out of this sheet every place where it is so, and pasting pieces of paper on it to bring up the light parts, it is placed inside the tympan, and the process repeated until the impression is made perfectly even and free from black and gray appearances. The thickness of the sheets used for this purpose must, of course, depend on the state of the impression pulled, of which the pressman only can judge. Some formes requiring much thinner sheets to bring the impression even than others, it is in judging correctly, and in using sheets of a proper thickness for this purpose, that the art of getting an even impression consists. For, if any part of the impression only requires a sheet of a ream weighing twelve pounds to make it perfect, it is obvious that, to use a sheet out of a ream weighing eighteen or twenty pounds, would make the part heavier than the rest, and con-

sequently all the other parts light. Practice and observation, however, are the only things by which this art can be practically attained. If any other trifling inequalities appear from the impression of this sheet, overlays of thin paper pasted on the tympan-sheet will perfect it. The pull may be then adjusted according to the nature of the forme, light or heavy, and be considered now ready for working. If the points have not springs, the best substitute is a piece of page-cord wrapped round the point-screws and passed across the tympan so as to fall within the margin of the thick cross-bar. This acts as a spring, and throws the sheet, when pulled, off the points, and thus insures good point-holes. The only difference between making-ready a sheet and a half-sheet, whatever be the number of pages on a sheet, is, that the register of the sheet is not made till the inner forme is off, and the second or outer forme is laid on, whereas the register of a half-sheet is made in making-ready, before it is gone on with.

But if the half-sheet of twelves, which I suppose to be now made-ready, consists of stereotype plates, the process of getting it ready will be somewhat different. For instance, after the plates are put on the blocks or risers, at equal distances, they should be marked, that they may be better detected if they move. This done, the proper blankets are put in the inner tympan, and, without rolling an impression, pulled, before the tympan-sheet is laid. By the impression of this sheet, such plates as are found low are raised by underlays of paper, of various thicknesses, being put under those parts of the plates on the blocks which come off light. This done, a second sheet is pulled for the same purpose, and again adjusted in the same way, until a tolerable impression is exhibited. The forme is now ready for the tympan-sheet, but before this is laid, ascertain whether any of the plates are moved from their places on the blocks before marked. Satisfied that the forme is correct, the tympan-sheet may be laid, and proceeded with as before advised, namely, screw on the points, get register, pull a sheet or two and cut out the impression, where necessary, to paste in the inner tympan, cut out the frisket, overlay, &c. The heap is then lifted on the paper-horse, the bank cleared of all waste paper, and the forme gone on with.

We would also commend to the attention of the young pressman the remarks contained in Stower's "Printers' Grammar," pp. 345—354; in Savage's "Dictionary," pp. 468, 469; in "The American Printer," pp. 228—231; and in Johnson's "Typographia," Vol. II., pp. 519—523.

Making-up.—The operation of forming matter into pages. In printing-offices where the clicking system is not acted upon, each compositor makes up his own matter. The compositor who has the first take on the work proceeds without delay to make it up as soon as he has completed it. Having completed as many pages as his matter will make, he passes the overplus, if less than half a page, with the correct head and folio, to the compositor whose matter follows his, at the same time taking an account of the number of lines loaned; if, on the contrary, the overplus makes more than half a page, he borrows a sufficient number of lines to complete his page; each compositor keeping an account of the number of lines borrowed and loaned. The second compositor, following the same course, passes the make-up to the next in succession; each man passing the make-up in like manner without unnecessary delay. But on newspapers and periodicals, the "printer" undertakes this duty; as also do clickers in companionships.

Making-up Furniture.—Dressing a chase with suitable furniture, side and footsticks, so that a proper margin will be given to the work when printed. This duty falls to the lot of the Quoin-drawer Overseer during the first portion of the work; but if the same furniture is used over again for the same or a similar work, the compositor transfers it from one set of pages to another without extra charge.—See **MAKING MARGIN**.

Making-up Letter.—When a work is given out to a companionship, the clicker applies to the store-keeper for a sufficient quantity of letter to keep a certain number of men employed, or to get up a given number of pages. If any part of the matter for distribution, whether in chase or in paper, be desirable or otherwise on account of the sorts it may contain, it should be divided equally, or the choice of it thrown for. When a new companion is put on the work after the respective shares of letter are made up, and if there be not a sufficiency to carry on all the companionship without making up more, he must bring on an additional quantity before he can be allowed to partake of any of that which comes from the press.

Mallet.—A wooden hammer, wherewith by the aid of the shooter or shooting-stick the quoins are wedged in or driven up, and the forme is made secure. In the early days of printing, the head of the mallet was round, but now it is almost square, the lower side, or that into which the handle is fitted, being made smallest. A useful size for a news mallet is five inches in breadth at the top, and four inches in breadth at the bottom, and about three inches thick. The handle, which is best made of beech or ash, should be a little more than an inch in diameter and seven or eight inches long. The hole in the head to receive the handle should be bevelled each way from the centre on two sides, so that the handle is tightly wedged in at the upper end and there is no danger of the head falling off. Mallets for locking-up jobbing matter are made somewhat smaller and lighter. In conjunction with the planer, the mallet is used to plane down formes. Although this and the operation of locking-up formes appear to be exceedingly simple operations, it may be truly said that not one compositor in a hundred knows how to perform them properly. Mr. J. B. Cursons has pointed out in the *Printers' Register* that, "In the first place, they do not trouble themselves to fit the quoins, which should be pushed up tightly with the thumb in such a position that when locked-up tight with the mallet, they should fall about four Picas from the head and foot of the page; instead of which they are frequently rammed up to the top of the sidestick, which causes the pages to go crooked and lift badly. Then in using the shooting-stick, instead of holding it in almost a horizontal position, so as to drive the quoins up easily, many compositors give it but a slight decline from the perpendicular, the consequence being that the shooting-stick (if box) splits, and the printer's joiner is blamed for selling an inferior article, to say nothing of the injury to the stone or bed of the press (if the shooting-stick is iron) by the indentations it makes at every strike of the mallet. Lastly, in planing the forme, instead of gently tapping it—in the *centre*—with the handle of the mallet, it is customary to strike it heavily with the head—not in the centre, but at one end. The matter, therefore, cannot be fairly planed down, as the pressure of the blow acts similarly to the screws of a platen being loose at one end and tight at the other, giving all the impression on one side. Every printer must have observed a well-used planer, with two indentations on each side of the centre."

Margin.—See MAKING MARGIN.

Marginal Notes.—Notes at the fore-edge of the page, standing opposite the matter to which they refer. They are usually called "side notes" by printers (*q.v.*).

Marks.—Certain symbols used by printers, such as the hyphen, apostrophe, brace, crotchet or bracket, the ellipsis, &c. There are marks of quotations, accentual marks, the index, leaders, and dots, &c., which will be found duly described separately. In the composing room and the closet the word is used to denote certain alterations made in proofs by the reader, or others, such as "readers' marks," "authors' marks."—See PROOF-READING.

Mathematical Signs.—See SIGNS.

Matrices.—See TYPE FOUNDRY.

Matter.—Pages of type composed for any work; columns for newspapers; the type set for jobs. In well-arranged printing-offices it is divided into matter for distribution, matter for working off, doubtful matter, good matter, &c., according as it is to be used or distributed, &c.

Measure.—The width in Pica ems of a line, page, or column of type.

Medical Signs.—See SIGNS.

Medium.—A size of paper.—See DIMENSIONS OF PAPER.

Metal.—The material of which type is composed. There are at present three classes, viz., ordinary metal, hard metal, and extra hard metal, the nature of which respectively will be found under the title of TYPE FOUNDRY. What is called "Patent Hard Metal," is the invention of Mr. J. R. Johnson, an analytical chemist. In 1852, he patented a hard type alloy into which zinc entered largely, but had to abandon it on account of the tendency

to rust or oxidise of alloys of that metal. In 1854 he patented another alloy, in which, by substituting tin for lead, wholly or in part, he obtained a series of alloys varying in hardness according to the amount of tin substituted. When all the lead is thus replaced, a metal nearly equalling brass in hardness results. The type with which this Dictionary is printed will cut the best old metal like a knife, and any letter of the fount may be driven into a similar letter of the old type with a hammer like a steel punch into copper. A company, called the Patent Type Foundry Company, was established in 1857, to supply the printing trade with book and newspaper founts manufactured of this description of metal, by patent automatic machinery. Its foundry is situated at No. 31, Red Lion-square, London, W.C.

Metal Furniture.—See FRENCH FURNITURE.

Metal Rules.—Fine lines cast on one, two, three, and four em bodies, in the centre of the type. Sometimes there are en metal rules cast; they are used in dates, such as 1868-9; also in tabular matter, where the columns require an end to make up the width. They are also used in lengthening braces, thus:—

Milled Boards.—A description of thick, hard cardboard, used to form the sides of books, and for mounting pictures upon, making boxes, &c. The standard sizes are:—

Pott	17½ × 14½	Whole Imperial	32 × 22½
Foolscap	18½ × 14½	Long thin	30 × 21
Crown	20½ × 16½	Atlas	30 × 26
Small Half Royal	20½ × 13	Long Royal	34 × 21
Large Half Royal	21 × 14	Colombier	36 × 24
Short	21 × 17	Large Atlas	34 × 27
Half Imperial	23½ × 16½	Gt. Eagle or Dbl. Eleph.	40 × 28
Small Half Ditto	23 × 15¾	Emperor	44 × 30
Middle or Small Demy	22½ × 18½	Double Royal	46 × 21
Lar. Mdle. or Lar. Demy	23½ × 18¾	Long Colombier	49 × 24
Large or Medium	24 × 19	Long Double Elephant	50 × 27½
Small Whole Royal	25¾ × 19¾	Antiquarian	54 × 30
Large Whole Royal	28 × 21	Extra Antiquarian	54 × 34

Minion.—A size of type one size smaller than Brevier and one size larger than Nonpareil. The following are the number of lines to the foot, according to the standards of the leading foundries:—

Caston, 122; Figgins, 122; Reed & Fox, 122; Patent Type Foundry Company, 120.

Missal Caps.—A style of fancy letter, used generally as initials to Old English or Black letter. The following is a specimen:—

FAMILY DEVOTIONS

Mitreing Guard.—A small machine used for mitreing brass rule. It is made of cast-iron, with the exception of the front, which is of hardened steel. When a job requires a brass rule border, the rule is cut to suit the four sides of the page; but instead of printing them thus,

the rule is fixed in the mitreing guard, by means of a screw, and the ends filed till they join thus:—

A neater appearance is thus obtained, and greater credit is reflected on the compositor.

Mitreing Machine.—A machine for mitreing wood rule, brass rule, &c. It is similar to the Mitreing Guard, but on a larger scale.

Mitred Rules.—See MITREING GUARD.

Monk.—A blotch of ink on the printed sheet, arising from insufficient distribution of the ink over the rollers.

Moulds.—See TYPE FOUNDRY.

Music Types.—Moveable types used in producing cheap music in large quantities. The first good music types were those cut about twenty-five years since by Mr. Hughes. Mr. E. Cowper invented a mode by which music could be printed in two forms—one being the lines, printed first; the other the notes, &c., printed on the lines. This plan did not work well, and the late Mr. Branston devised a method of striking the punches deeper into the plate, and then taking a stereotype plate from it in type metal. After the white parts were blocked out, the music was sufficiently in relief to be capable of being printed at the common printing press. A very improved method of casting music type, is now adopted by the Patent Type Founding Company.

Mutton Quads.—A slang term for em quad. The use of this word appears to be that it is more distinct than the syllable for which it is used, just as "nut" quad is used for en quad—the difference between the sound of em and en being so slight.

N.

Naked Forme.—A forme without furniture.

Nature Printing.—This beautiful art was first introduced and practised in Vienna, whither the late Mr. Henry Bradbury went, on purpose to acquire the knowledge he subsequently carried out with so much skill and ability. The flowers, leaves, or plant itself (as the case may be) are first dried, by placing the subject between thick blotting papers, and pressing in a screw press, frequently changing the papers, and repeating the process until all moisture is extracted; in some instances the services of the sun, or even artificial heat, are additionally called into requisition; when the subject is sufficiently dried, which may be known by its brittleness, it is ready for manipulation. The plant may be said to engrave its own plate thus:—a thick piece of pure, soft, sheet lead, rather larger than the paper on which the subject is ultimately to be printed, must be planed as bright and even as a looking-glass. On to this plate the subject is laid in the required position, upon which again is placed a highly-polished steel plate, face downwards. The whole is then placed between powerful rollers, until the plant is imbedded in the lead, the result being a *fac-simile* matrix. An electrotype of this matrix is then taken, from which, again, another electrotype is requisite, in order to give the original effect when printed from. The great object of Nature Printing is to reproduce very rare botanical specimens so truthfully as to enable the student of any country to examine the print, and obtain the same result to his investigation as though he actually had the plant itself. The advantage attained may be easily estimated from the fact that there are numerous instances where only one specimen is known to be in the possession of individuals, and even if it were to be sold, its price would deter many from attempting to obtain it.

News-hand.—A compositor employed solely on newspaper work.

News-house.—A printing-office in which newspapers only are printed. This term is used to distinguish them from book and job houses.

News-machine.—A machine specially adapted for printing newspapers.

Newspapers (Laws relating to).—See LAWS RELATING TO THE PRESS.

Newspaper Stamp.—The Newspaper Stamp, abolished on Friday, September 30, 1870, had an existence of one hundred and fifty-eight years. In the year 1712, Queen Anne sent a message to the House of Commons complaining of the publication of seditious papers and factious rumours, by which designing men had been able to sink credit, and the innocent had suffered. On the 12th of February in that year, a Committee of the whole House was appointed, to consider the best means for stopping the then existing abuse of the liberty of the press. The evil referred to had existence in the political pamphlets of the period. A tax on the press was suggested as the best means of remedying the evil, and for the purpose of avoiding a storm of opposition the impost was tacked on to a Bill for taxing soaps, parchment,

linens, silks, calicoes, &c. The result of the tax was the discontinuance of many of the favourite papers of the period, and the amalgamation of others into one publication. The Act passed in June, 1712, came into operation in the month of August following, and continued for thirty-two years. The stamp was red, and the design consisted of the rose, shamrock, and thistle, surmounted with a crown. In the *Spectator* of June 10, 1712, Addison makes reference to this subject, and predicts great mortality among "our weekly historians." He also mentions that a facetious friend had described the said mortality as "the fall of the leaf." The witty Dean Swift, in his *Journal to Stella*, under date of August 7, speaks of Grub-street as being dead and gone. According to his report, the new stamps had made sad havoc with the *Observer*, the *Flying Post*, the *Examiner*, and the *Medley*. Twelve years afterwards—namely 1724—the House of Commons had under consideration the practices of certain printers, who had evaded the operations of the Stamp Act by printing the news upon paper between the two sizes mentioned by the law, and entering them as pamphlets, on which the duty to be paid was 3s. for each edition. Its deliberations culminated in a resolution to charge 1d. for every sheet of paper "on which any journal, mercury, or any other newspaper whatever shall be printed, and for every half-sheet thereof the sum of one half-penny sterling." In 1761, the Stamp Duty upon newspapers was made 1d., or $\frac{1}{4}$ 1s. 8d. for one thousand sheets. The next change in the Stamp Duty was effected on the 28th of May, 1776, when Lord North advanced the price from 1d. to $1\frac{1}{2}$ d. Another alteration was effected on the 12th of August, 1789. On this occasion the Stamp was increased from $1\frac{1}{2}$ d. to 2d. In 1794, the Stamp was up to $2\frac{1}{2}$ d., and in May, 1797, to $3\frac{1}{2}$ d. The highest rate of the Stamp was obtained in 1815, when the amount was 4d. After this date a period of decline ensued. In the reign of William IV. an Act was passed for the reduction of Stamp Duty upon Newspapers from 4d. to 1d., and $\frac{1}{2}$ d. on any supplement. This Act came into operation on the 15th of September, 1836, from which date the rise of the cheap paper era may be dated. The next improvement occurred in 1855, when the compulsory use of the stamp was abolished, save and except as a means of passing the paper through the post. It was decided, in 1870, to determine the operation of the old Act, and to inaugurate a new order of things more in accordance with the liberal spirit of the age.

News-work.—That branch of printing which is confined exclusively to newspapers. Expedition is necessary in getting out a newspaper, and the greatest order and punctuality must be observed to ensure its publication at the proper time. Compositors on a daily paper are expected to set-up a given number of lines in every hour; otherwise the printer would not be able to estimate the strength of his staff. On the morning papers the news-hands generally commence work at three o'clock in the afternoon, so as to get in their letter and be ready to take copy at six or seven. The copy is served out in "takes" of about a stickful, and each compositor, as he finishes his take, applies for another one. As it frequently happens that towards the close the copy comes in faster than the regular hands can set it up, a number of supernumeraries, called "Grass-hands" (*g.r.*), are taken on till the paper is up. These grass-hands are also engaged to occupy the frames of regular hands who may have fallen sick, or have asked leave to "sell out" (*g.r.*) for a night. In such cases they take copy and have the same share of work as the regular hand whom he represents. An evening paper is conducted on the same principle, with this difference, that the work is done in the day-time instead of at night. The men start composition at 8 a.m., the paper being published at 2 p.m. The distribution of the type for the next morning's issue is then proceeded with, till the time for leaving off; about six or seven o'clock in the evening. The system adopted on a weekly paper greatly differs from that of a daily paper. Being a summary of the week's news, the copy is chiefly culled from the daily papers as they are published. The early part of the week is therefore devoted to distributing the type, and a number of apprentices or turnovers get up the police news, parliamentary reports, and other general intelligence until about Wednesday or Thursday, when a number of grass-hands are called in to get up the heavy

portion of the late news. One long day (say from eight o'clock in the morning till midnight) generally suffices for this, with a few hours each day after for the various editions. On all newspapers, a few hands are kept back ready to set-up or make alterations for any important news that may call for a special edition. In a general way a compositor who has been brought up on news-work is incompetent for the purposes of a general printing-office,—in fact, they don't care to apply for employment in a book-house, as the work is not so well paid for; but they forget that the extra pay for news-work is, at the best, but a poor compensation for the night-work, and consequent deprivation of domestic comfort and happiness, to say nothing of the pernicious effects it has upon the man's constitution.

Nick.—A hollow, cast crosswise in the shank of the types, to enable the compositor when composing to perceive readily the bottom of the letter as it lies in the case, as the nicks are always cast on that side of the shank on which the bottom of the face is placed. In ordinary news type, printers should be careful to stipulate that the nick of each fount should be different, more especially founts of the same body; for a great deal of inconvenience frequently arises, owing to the founders casting different founts of type with a similar nick in each. Although this may, at the first sight, appear of little moment, yet it is attended with much trouble; and works are frequently disfigured with it, notwithstanding all the care of the compositor and the reader. For instance, where the nicks are similar, a compositor, in distributing head lines, lines of Italic, small capitals, or small jobs—in the hurry of business—through inadvertency—or carelessness—frequently distributes them into wrong cases, when it is almost impossible for another compositor who has occasion to use these cases next, to detect the error till he sees the proof; unless he is in the habit of reading his lines in the stick, which many are not. He has then a great deal of trouble to change the letters; and, with all the attention that the reader can bestow, a letter of the wrong fount will frequently escape his eye, and disfigure the page. Even in founts that are next in size to each other; for instance,—Bourgeois and Long Primer, Long Primer and Small Pica, Small Pica and Pica, and Pica and English, head lines, &c., are not unfrequently distributed into wrong cases, where the nick is the same; which always occasion loss of time in correcting the mistakes, and sometimes pass undiscovered. By going as far as three or four nicks, a sufficient variety may be obtained to distinguish one fount from another without hesitation. A single nick may be used in the centre or at the foot of the shank; but we decidedly object to the single nick, or, in fact, any nick being at the top of the shank, and are glad that it is not frequently adopted. Compositors have become so accustomed to the nick being at the lower part of the shank, that in composing type with the nick at the top, they can scarcely help (let them be ever so careful) having some of the letters topsy-turvy. Where there are a great number of founts, it would add to the distinguishing mark, if consisting of more than one nick, that one of them should be cast shallow; but where there is only one nick, it ought always to be cast deep. In Russia, Poland, and in some parts of Germany, the nick is placed on the reverse side of the letter, viz., the back of the type, it being considered by the printers of these countries an advantage to them in composing.

Nonpareil.—A size of type less than Minion and larger than Ruby, and exactly half that of Pica. The standard number of lines to the foot, according to all the founders, is 144.

Notes.—These are of three descriptions, viz., footnotes which stand at the bottom of the page, marginal notes which are placed at the sides, and in-cut notes which are let into the matter. They are invariably set in type two sizes smaller than the text.

Numerals.—Numbers expressed by Roman letters, as Vol. II., chap. xxiv. Numeral letters were used by the Romans, to account by; and are seven in number, viz.: I V X L C D M. The reason for choosing these letters seems to be this, viz.: M being the first letter of *Mille*, stands for 1000; which M was formerly printed IJ. Half of that, viz.: IJ, or D, is 500. C, the first letter of *Centum*, stands for 100; which C was anciently printed E, and so half of it will be printed 50. L. X denotes 10,

which is twice 5, made of two V's, one at top, and the other at the bottom. V stands for 5, because their measure of *five uncies* was of that shape; and I stands for 1, because it is made of one stroke of the pen. If a less number stands before a greater, it is a rule, that the less is *taken from* the greater; thus, I taken from 5 remains 4, IV. 1 from 10 remains 9, IX. 10 from 100, remains 90, XC. If a less number follows a greater, it is a rule that the less is *added* to the greater; as 5 and 1 make 6, VI. 10 and 1 make 11, XI. 50 and 10 make 60, LX., &c. Sometimes Small Capitals are used for Numerals, in the same manner as the seven sorts of Capitals; and look as well, if not neater, than these last; but we observe that, in the dates of years, some choose to put the first letter a Capital; as, MDCCL., &c., for which they may have their reasons; nevertheless, we join with those who disapprove of mixtures in figures, or to make them appear like nouns substantives, with capitals at the head of small ones. To express numbers by Letters was not the invention of the Romans originally, because several nations, anterior to them, did use that method in counting; and the former Romans were particular only in this, that they employed to numerate by. But when printing was discovered, and before Capitals were invented, small letters served for Numerals; which they have done ever since; not only when the Gothic characters were in their perfection, but even after they ceased, and Roman was become the prevailing letter.

Numbering Machine.—See PAGING MACHINE.

Numerical Printing.—*Ibid.*

O.

O.—An abbreviation of Overseer. A common phrase in speaking of the overseer is, "the cap. O."

Obelisk (†).—A reference mark to the second note on a page, otherwise called the dagger (*q.v.*)

Octavo.—A sheet of paper folded into eight. Publishers and printers generally style an octavo work as "8vo."

Odd Page.—The first, third, and all uneven numbered pages.

Odd Folio.—A folio consisting of an uneven number.

Off.—When a job is said to be off, it is meant that it is duly printed and finished.

Off-cut.—Any part of a sheet which is cut off before folding.

Off its Feet.—When the letters do not stand upright.

Oil.—The best oil for presses is neat's oil, which does not candy nor become glutinous, as almost all other oils do. On this account it is used in machinery employed in cotton manufactories, where it is necessary to have as little friction as possible.

Old English.—A style of letter used in the early days of printing; it is commonly called "Black" (*q.v.*), on account of its darker and heavier appearance than Roman.

Old-style Letter.—Roman and Italic letter of the design used previous to the present century, but which has been re-adopted to a great extent during the last few years. The following is a specimen:—

Regent Circus. *Antique*

On its Feet.—When letter stands perfectly upright, it is said to be "on its feet."

Opening.—The space on the galley between two "takes" of matter.

Open Matter.—Widely leaded matter; matter that contains a number of quadrats, such as poetry, &c.

Ornaments.—Designs intended for illustrating or ornamenting trade catalogues, hand-bills, bags, &c., are called ornaments by the typefounders.

Orthography.—It would be quite impossible within our limits to give anything like a treatise on this subject, but the

following short and simple rules, if duly followed, will avoid many mistakes, and prevent many doubts:—

RULE I.—Monosyllables ending with *f*, *l*, or *s*, preceded by a single vowel, double the final consonant; as staff, mill, pass, &c. The only exceptions are, of, is, has, was, yes, his, this, us, and thus.

RULE II.—Monosyllables ending with any consonant but *f*, *l*, or *s*, and preceded by a single vowel, never double the final consonant; excepting only, add, ebb, butt, egg, odd, err, inn, bunn, purr, and buzz.

RULE III.—Words ending with *y*, preceded by a consonant, form the plural of nouns, the persons of verbs, verbal nouns, past participles, comparatives, and superlatives, by changing *y* into *i*; as spy, spies; I carry, thou carriest; he carrieth or carries; carrier, carried; happy, happier, happiest.

The present participle in *ing*, retains the *y*, that *i* may not be doubled; as, curry, carrying; bury, burying, &c.

But *y*, preceded by a vowel, in such instances as the above, is not changed; as, boy, boys; I cloy, he cloyes, cloyed, &c.; except in lay, pay, and say; from which are formed laid, paid, said; and their compounds, unpaid, unpaid, &c.

RULE IV.—Words ending with *y*, preceded by a consonant, upon assuming an additional syllable beginning with a consonant, commonly change *y* into *i*; as happy, happily, happiness. But when *y* is preceded by a vowel, it is very rarely changed in the additional syllable; as, coy, coyly; boy, boyish, boyhood; annoy, annoyed, annoyance; joy, joyless, joyful, &c.

RULE V.—Monosyllables, and words accented on the last syllable, ending with a single consonant preceded by a single vowel, double that consonant, when they take another syllable beginning with a vowel; as wit, witty; thin, thinnish; to abet, an abettor; to begin; a beginner.

But if a diphthong precedes, or the accent is on the preceding syllable, the consonant remains single; as, to toil, toiling; to offer, an offering; maid, maiden, &c.

RULE VI.—Words ending with any double letter but *l*, and taking *ness*, *less*, *ly*, or *ful*, after them, preserve the letter double; as harmlessness, carelessness, carelessly, stiffly, successful, distressful, &c. But those words which end with double *l*, and take *ness*, *less*, *ly*, or *ful*, after them, generally omit one *l*, as, fulness, skillless, fully, skilful, &c.

RULE VII.—*Ness*, *less*, *ly*, and *ful*, added to words ending with silent *e*, do not cut it off; as, paleness, guileless, closely, peaceful; except in a few words; as, duly, truly, awful.

RULE VIII.—*Ment*, added to words ending with silent *e*, generally preserves the *e* from elision; as, abatement, chastisement, incitement, &c. The words judgment, abridgment, acknowledgment, are deviations from the rule.

Like other terminations it changes *y* into *i*, when preceded by a consonant; as, accompany, accompaniment; merry, merriment.

RULE IX.—*Able* and *ible*, when incorporated into words ending with silent *e*, almost always cut it off; as, blame, blamable; cure, curable; sense, sensible, &c.; but if *c* or *g* soft comes before *e* in the original word, the *e* is then preserved in words compounded with *able*; as change, changeable; peace, peaceable, &c.

RULE X.—When *ing* or *ish* is added to words ending with silent *e*, the *e* is almost universally omitted; as place, placing; lodge lodging; slave, slavish; prude, prudish.

RULE XI.—Words taken into composition, often drop those letters which are superfluous in their simples; as handful, dunghil, withal; also, chilblain, fortel.

Out.—Anything omitted, and marked for insertion in the proof by the reader is said to be an "out."

Outer Forme.—The forme containing the first page of a book or newspaper.

Out of his time.—A youth is said to be "out of his time" when he has completed his apprenticeship. Hansard gives the following account of the old custom in the printing trade of "washing" young men who have just completed their apprenticeship, before admitting them into the ranks as journeymen. The custom still exists; and for an hour previous to the clock striking twelve, great preparations are made, and brains set to work to discover by which means the greatest noise can be made. He says:—"An old custom peculiar to printing-offices is termed Washing, and during the keeping up of which ceremony, if persons happen to reside in the neighbourhood of the office,

whose nerves are not made of stern stuff indeed, they will hardly fail of getting them shivered. Washing is had recourse to upon two occasions, either for rousing a sense of shame in a fellow-workman who had been idling when he might have been at work, or to congratulate an apprentice upon the hour having arrived that brings his emancipation from the shackles of his subordinate station, and advances him to manhood. Upon the former occasion, the affair generally ends with a wash of one act; but upon the latter, the acts are commonly repeated with a degree of violence proportioned to the expectancies of a liberal treat at night. Perhaps the following description may afford some slight idea of the nature and effects of the performance. Every man and boy attached to the department of the office to which the person to be washed belongs, is bound in honour, upon a given signal, to make in the room as much noise as he possibly can with any article upon which he can lay his hands. A rattling of poker, tongs, shovel, and other irons, is harmoniously accompanied with running reglet across the bars of the cases, shaking up of the quoin draws, rolling of mallets on the stone, playing the musical quadrangle by chases and crosses; and in the press-room, slapping the brayers upon the ink-blocks, a knocking together of ball-stocks, hammering the cheeks of the press with sheep's feet, &c.; in short, everyone uses the utmost means he can devise to raise the concert of din and clatter to the highest possible pitch of hideous discordancy, by means of the implements aforesaid; and then the whole is wound up with a *finale* of three monstrous huzzas." We may also mention that the apprentice is expected to treat the men in the office, either to a substantial luncheon; or, as is frequently the case, to a supper in the evening, to which each man subscribes an additional amount, in which case a glass of ale only is partaken at noon, just to wash the dust out of their throats, caused by shaking up the quoin drawers, &c.

Out of Copy.—When a compositor has finished his "take," he is said to be "out of copy."

Out of Register.—When the pages do not exactly back each other.

Outsides.—The outer sheets of a ream, which are disfigured by the cords. Reams are often made up of soiled and damaged sheets, and sold at a reduced price as "outsides." An outside quire consists of only twenty sheets.

Overseer.—The superintendent or manager of a printing-office. "The duties of an overseer," says Savage, "vary according to the size of the establishment, and the part that the principal takes in its management; but, generally speaking, he has the sole conducting of the practical department, receiving his general directions from the principal, and seeing that they are carried into execution in a proper manner. It is requisite, as a matter of course, that he should be intimately and practically acquainted with the business in all its details. It is of importance to the concern where he has the management, that he should blend urbanity with firmness; and show judgment and impartiality in giving out work, so that the business should proceed with regularity, and with satisfaction to all parties."

Overlay.—A piece of paper fastened on the tympan-sheet by means of paste, to give more impression to a low part of a forme. For overlaying a machine, see MAKING-READY.

Overrunning.—Carrying words backwards or forwards in correcting.

Over Sheets.—The extra sheets which are given out beyond what are actually required for the job, to provide against damages, bad impressions, &c.

P.

Pack.—Fifty-two cards made up into a bundle are called by printers and stationers a "pack."

Page.—One side of a leaf of a book, derived from the Latin *pagina*, the thing fastened, because originally leaves were fastened together, and the modern system of imposing the matter of leaves together was not invented.

Page Cord.—A description of strong thin twine used by printers for tying-up pages of matter.

Page Gauge.—A gauge used by compositors for measuring the length of pages during the operation of making-up. When a new work has been commenced, the compositor who has set the first take of copy marks off a certain number of lines, according to the size of the page, adding the folio and white lines; he then places a piece of reglet down the side of the page, close up to the head of the galley, and cuts a notch into it at the point where the page terminates.

Page (tying-up a).—This is a very simple operation, but one that requires a certain amount of knowledge and experience to perform it properly. The proper way to tie up a page for imposing, is to begin at the left top corner of the page, as it lies on the galley, wrap the cord round from left to right, and tighten each successive round at the right top corner. Passing it round about three times, and taking care to make the first end additionally secure each turn, draw the cord tight through that which is wrapped on the page so as to form a noose, the end of which is left two or three inches out for the convenience of untying when imposed. A page thus tied, with the cord round the middle of the shank, will always stand firm and be in no danger of being squabbled while lying on the stone or letter-boards. Many compositors often pass the cord five or six times round the page before fastening it, and it is not secure then, for the very reason that they do not adopt any system, but carelessly overlap the cord at each turn; but if pains are taken to place each round of the cord immediately above the previous one, as neatly as cotton is wound round a reel, it will be found that three times round will be sufficient to bind the type securely; whereas, if one of the half-dozen overlapping rounds should slip—which is frequently the case—the others naturally become loose, and many a page is squabbled in consequence. An advantage is also thus gained in imposing a forme; for instead of there being such a bulk of cord between the type and furniture, a single thickness only appears.

Pagination.—The series of numerals denoting the folios of a work. The pagination is consecutive, generally, throughout the volume; but occasionally, when books are issued in parts, each of them has its own separate pagination.

Paging Iron.—A small brass instrument, about the thickness of brass rule, and twenty-five ems long; but made in the shape of a slip galley, with a crooked ear or handle. It is used in a type-foundry for the purpose of placing the types in lines on the galleys previous to being tied up in pages for the printer. —See TYPE-FOUNDING.

Paging Machine.—A machine for printing consecutive numbers with great rapidity on sheets of paper, cheque-books, cards, &c. The numbers are usually fixed on the circumference of a revolving cylinder, which is brought down to the paper by some mechanical appliance, by hand or treadle motion; and after the impression has been effected, the cylinder takes a turn and another number is ready to be printed. Paging machines usually ink themselves, and are made to print double, treble, &c. Numerical printing is now quite a business in itself, although most bookbinders, paper-rulers, as well as printers, possess machines of their own.

Paging-up.—A phrase used in type-foundries for making letter into pages, and papering them up in the manner in which they are received by the printer. —See TYPE-FOUNDING.

Pale Colour.—When the impression is of a lighter colour than it ought properly to be, it is said to be "pale." The fault arises either from the negligence of the person who rolls, or the mechanical deficiencies of the inking apparatus.

Palette Knife.—A long flexible knife, without sharpened edges, used by pressmen for taking ink out of the can, and braying it out upon the stone or ink table; also for scraping rollers, &c.

Pamphlet.—A work consisting of not more than five sheets so called. It is paid something extra for at ease, as a compensation to the compositor for making up the letter and furniture without having any return of either, the whole being generally put in chase.

Paper.—A substance composed more or less of rags or vegetable fibre, used for printing, writing, &c. The various kinds of paper may be distinguished thus:—

According to *size*; as Demy, Foolscap, Crown, &c.

According to *use*; as printing, writing, wrapping, &c., papers.

According to *composition*; as rag paper, straw paper, wood paper, &c.

According to *mode of manufacture*; as hand-made, machine-made paper, &c.

According to the *water-mark*; as water-lined, wove, laid, &c.

The varieties of paper are, in fact, innumerable, just as are the materials from which it can be made and the uses to which it may be applied. It is necessary, therefore, in a comparatively small work like the present, to restrict our remarks to those sorts of paper with which the printer has most to do. As regards the *names* of different sizes of papers, it may be remarked that in ancient times, when comparatively few people could read, pictures of every kind were much in use where writing would now be employed. Every shop, for instance, had its sign as well as every public house, and those signs were not then, as they are often now, only painted upon a board, but were invariably actual models of the thing which the sign expressed—as we still occasionally see some such sign as a bee-hive, a tea-canister, a doll, or a lamb, and the like. For the same reason printers employed some device, which they put upon the title-pages and at the end of their books. And paper-makers also introduced marks by way of distinguishing the paper of their manufacture from that of others; which marks, becoming common, naturally gave their names to different sorts of paper. A favourite paper-mark between 1540 and 1560 was the jug or pot, and would appear to have originated the term, *pot* paper. The foolscap was a later device, and does not appear to have been nearly of such long continuance as the former. It has given place to the figure of Britannia, or that of a lion rampant supporting the eap of liberty on a pole. The name, however, has continued, and we still denominate paper of a particular size by the name of "foolscap." Post paper seems to have derived its name from the post horn, which was at one time its distinguishing mark. It does not appear to have been used prior to the establishment of the General Post-office (1670), when it became a custom to blow a horn; to which circumstance, no doubt, we may attribute its introduction. Bath post is so named after that fashionable city. The *sizes* of the sheets of the different classes of paper will be found under the head DIMENSIONS OF PAPER. The *quality* of paper is of the utmost importance in printing, for it is impossible to produce good press work on bad paper. Nothing but experience, however, will teach what is the most suitable kind for any particular job; while the price at which it is to be executed too frequently precludes a judicious selection. Some useful considerations on this subject will be found under the head of PRESS WORK.

Paper Board.—Otherwise called wetting board (*q.v.*).

Paper Duty.—An impost formerly levied on certain descriptions of paper, but recently repealed. See LAWS RELATING TO NEWSPAPERS.

Paper Knife.—A long broad knife, used by the warehouseman, to cut up the paper for printing. These knives are not much used now, as the cutting machine has superseded them, by cutting the paper in larger quantities, thus saving much time, and giving a cleaner cut to the edges.

Paper Stool.—A strong wooden stool on which the piles of paper are deposited while the warehouseman is hanging the sheets on the poles.

Papering the Cases.—Affixing pieces of paper to the bottom of the boxes, in order that the types may not be damaged by coming into direct contact with the wood during the process of distribution. It is done by the printers' joiner.

Papering-up Letter.—Wrapping up the pages of matter in paper to be placed aside for future use. The type should be carefully tied up, and perfectly dry before it is papered, and its destination or description legibly written on the outside.

Par.—An abbreviation of the word "paragraph" (*q.v.*), generally used by compositors.

Paragon.—A type one size larger than Great Primer and one smaller than Double Pica. The proportions to the foot of the Paragon of the leading type-foundries are as follows:—

Caslon, 4½; Patent Type Founding Company, 45; Figgins, 44½.

Paragraph.—This sign (¶), which is used for marking off some clause or portion of reading matter which is intended to be distinct from what has gone before, is now seldom used, except as a reference mark, or in the Bible to divide chapters. In Common Prayer-books paragraphs are used to denote the rubrical direction. The word is most frequently now applied to the matter itself, and not to the sign which denotes it. Newspaper paragraphs are usually short and pointed, and a peculiar art is frequently displayed in their wording. It is usual to commence a paragraph with an indentation of one or more ems, according to the width of the measure and the openness of the matter, as in a long line the indentation of one em is scarcely sufficiently noticeable. This, however, is left to the discretion of the author or printer. Many compositors have a somewhat dishonest habit of driving out a word or two at the close of a paragraph to make a "fat" line. This should always be discontinued, especially if regard is had to the appearance of the work subsequently. Part of a word or one or two short words should never form a break-line of themselves; and a careful compositor will rather overrun backwards than disfigure his work in this way. The reader should never pass this irregularity. The last line of a paragraph should on no account commence a page, neither should the first line end one, if possible. The length of the page should be altered in preference to doing so. Authors and editors are frequently censurably careless in marking the commencement of a paragraph in their copy, and the expense of printing is materially increased by overruns having to be made on this account. The commencement of a paragraph is best marked by a crotchet thus [being placed before the first word.

Parallel (||).—A reference mark which follows the section and precedes the paragraph.

Parallel Matter.—In some works, the arguments for and against are printed in parallel columns. When this is the case, each paragraph commences exactly level with the one to which it refers in the opposite column, and the shortest paragraphs are continued with as many white lines, as to bring them to the same length as their opponent.

Parchment.—A thin skin used for covering tympan, both inner and outer, by reason of its toughness and durability. Old deeds, leases, &c., are frequently used for economy sake. A good skin is free from imperfections or cuts, and is of uniform thickness throughout. The outer tympan may be a little thicker than the inner one.—*See* TYMPAN.

Parenthesis ().—A sign used to inclose interpolated words or sentences, which serve to strengthen the arguments, though the same sentence would read correctly were the enclosed matter taken away. Parentheses are not now so frequently used as formerly, as commas serve the same purpose and are neater in appearance.—*See* PUNCTUATION.

Partner.—In working at press, two men are generally employed; they style each other their partner, and share the proceeds of all work executed by them on the piece.

Pass Book.—A book used for denoting the number of lines taken or loaned in making-up. The following is a sample of how the making-up is passed:—

ROBINSON to BROWN.		Folio 93,—13th page in Sig. G.		
<i>Lines to Good.</i>			<i>Lines to Bad.</i>	
Robinson	8	Brown ... ..	...	16
Smith	10	Green ... ..	...	4
Jones	4	White ... ..	...	2
	—			—
	22			22
	—			—

Since the Clicking system has become so much in vogue, pass

books are seldom required. As we have explained before, great loss of time is occasioned in passing the making-up.

Paste.—A thick semi-fluid compound used for the purpose of causing paper, &c., to adhere together. To make paste that will keep a year, dissolve a teaspoonful of alum in a quart of warm water. When cool, stir in flour to give it the consistency of thick cream, being particular to beat up all the lumps; stir in as much powdered resin as will lay on a sixpence, and throw in half-a-dozen cloves, to give it a pleasant odour. Have on the fire a tea-cup of boiling water; pour the flour mixture into it, stirring well all the time. In a few minutes it will be of the consistency of treacle. Pour it into an earthen or china vessel; let it cool; lay a cover on, and put it in a cool place. When needed for use, take out a portion and soften it with warm water.

Paste Points.—Small brass points, pasted on the tympan for obtaining good register for cards, circulars, &c.

Paste Pot.—A bowl or box used for holding the paste in a printing-office.

Pearl.—A type one size larger than Diamond and one smaller than Ruby. The number of lines to the foot are as follows:—

Caslon, 178; Figgins, 180; Reed & Fox, 184; Patent Type Founding Company, 180.

Peel.—An instrument shaped somewhat like the letter T used for hanging up sheets on the lines. The length of the handle is determined by the height of the lines, and the size of the head by the sheets to be hung up.

Pelts.—Sheep skins with the wool taken off, dressed with lime and dried. When required for use they are steeped in urine, and manipulated until they are soft. They were used for inking the type before composition balls and rollers were invented.

Penultimate.—The last syllable but one in a word.

Perfecting.—Printing the second forme of a sheet; also called working the reiteration, or backing it.

Perfect Paper.—The full quantity of paper required for any job, together with some sheets extra to provide for waste, damages, &c.

Perfect Ream.—A ream consisting of 21½ quires or 516 sheets, and in which there are no outside or imperfect quires.

Period, or Full-point (.).—There are three uses for this mark of punctuation. 1. To indicate the end of a sentence. 2. To show the end of an abbreviation, as Prof. for professor. 3. To serve instead of a leader in tables of contents, figure work, or to fill up a space which the leader does not entirely occupy.—*See* PUNCTUATION.

Pica.—A type one size larger than Small Pica and smaller than English. The proportion to the foot, according to the standards of the foundries, are:—

Caslon, 72; Reed & Fox, 72; Patent Type Founding Company, 72; Figgins, 72½.

Pica is the unit of measurement in the printing business; leads are made up to it, also rules and furniture. Thus, lines are said to be so many Picas in breadth, and the page so many Picas in depth; the width of furniture is from two to eight or ten Picas. Large type and wood letter are made to so many lines of Pica, termed thus:—8-line Pica Roman, 14-line Pica Antique, &c.

Pica-Small-Pica.—When Small Pica type is cast on a Pica body, it gives the appearance in print of thin leaded matter, and is named as above. In casting up the page, the number of Small Pica ens are taken for the width, and the number of Pica ems for the length, which, being multiplied, give the quantity of letters in the page.

Pick.—A small quantity of dirt which adheres to the face of the type and causes a smut on impression. It requires to be picked out with the bodkin or, what is better, removed by the pick brush.

Pick Brush.—A hard brush used to take picks or dust out of a forme.

Picker.—A kind of spike or bodkin, used by type-founders for picking out imperfect letters.

Picker.—In stereotyping, a man who makes corrections in stereotype plates. When a plate becomes battered, he bores a hole where the battered letter appears, and solders the head of a good type into the plate in its place.

Picking-up Type.—A common phrase used instead of composing; a "picker-up" of type is used in a derogatory sense to denote that a man is only capable of the mere mechanical operation of lifting the type, but is not accustomed to the more intellectual work of making good divisions, judicious spacing, &c.

Pie.—A mass of letters disarranged and in confusion. The style of management of a printing-office may always be known by the quantity of pie it contains, proportionate to its size, for every qualified overseer takes care to have the least amount of it he possibly can. No receptacle for pie should be accessible to the workman, and every bit that is made should be rigorously cleared away. In America it is spelt "Pi."

Pig.—A pressman was formerly frequently so called by compositors. The use of this class of words is, happily, growing less every day, proportionate to the increasing education, independence, and refinement of the workmen.

Pigeon Holes.—Unusually wide spaces between words, caused by the carelessness or want of taste of the workman. The word is used disrespectfully in this sense, but in cases of extreme hurry, such as on newspaper work, where short "takes" have to be quickly justified to make even, pigeon holes are unavoidable.

Pile.—A heap of paper in the warehouse or in the pressroom.

Placing Matter.—When an editor or author of a classified work (such as this Dictionary) sends in his copy irregularly, and the compositor has to place the paragraphs in alphabetical order, an extra charge is usually made by him on that account in the cast-up. Also, where three or more types are used in a work or magazine, a similar charge is made for placing.

Planing Down.—The process of making perfectly even the face of the letters on the imposing surface or on the press table. Although a simple operation, it is seldom properly performed, and the directions given under the head "Mallet" in this Dictionary should be impressed on the workman. Types that stand up rather high should never be planed after the forme is locked up. To do so would be to subject them to the utmost danger of being battered.

Planer.—A block of beech or other hard wood, perfectly smooth and even on the face, used for planing down (*q.v.*) the type in a forme. A useful size for general purposes is nine inches long, four and a-half inches broad, and two inches deep. For newspaper work larger sizes are occasionally employed. A groove usually runs along the two longer edges, to enable the workman to handle it more readily.

Platen.—That part of the press or machine which descends on the forme (protected by the blanket, tympan, &c.), and effects the impression. The word is frequently, but incorrectly, spelt "platten."

Platen Machine.—A machine in which the impression is effected by a platen, as distinguished from one which contains a cylindrical or other impressing surface. Platen machines are sometimes used for very fine printing, but they are necessarily so much slower in working, and cylinder machines have been so much improved, that they are fast dropping out of use, and few, indeed, are manufactured at the present day. They are also more dangerous; for one or more boys have to turn down the tympan, and are in danger of having their arms crushed in the machinery.

Plate Paper.—A thick paper, used for printing page wood-engravings, to be inserted in a volume by the binder.

Planting Sorts.—When certain sorts run short upon a particular work, and one compositor, having a good quantity, hides them from his companions, he is said to "plant" them.

This is a reprehensible custom, and in well-regulated printing-offices is punished by a fine; for not only is it a hindrance to the progress of the work, but oftentimes involves an unnecessary expense, by causing an order on the typefounder for sorts that might be done without, did more unanimity of feeling exist in the companionship.

Point Holes.—Fine boles made by the points, by which the second and succeeding impressions are registered.

Points.—Two thin pieces of iron, each having points projecting from one end. They are fixed to the tympan to secure good register (*q.v.*).

Points (Punctuational).—The characters ; : . - ? ! () ' and the marks of reference are all so called by printers. For the use of the former see PUNCTUATION; and for the latter see the different characters in their alphabetical order.

Point Screws.—Two small bolts with screws at the end which go through holes in the tympan. They are square headed, with a nut on the upper side, and serve to fix the points securely to the tympan.

Poles.—The lengths of wood fixed across the room, on which printed paper is hung to dry. They should always be kept in a condition of scrupulous cleanliness.

Poll.—A term used by compositors and pressmen, indicating the amount of their weekly earnings. It is a common expression with them to say that they have made a "good poll" or a "bad poll."

Polling.—A vulgarism among printers. When a man happens to be the first to finish his job, or arrives at his work earliest, he says he has "polled" the others. Very often there is a race between two workmen, which is called Polling.

Preface.—The introductory remarks made by the author or editor of a volume. In printing, the preface is usually reserved till the last, so as to be worked with the title and other oddments, forming sig. A.

Press.—This word has three meanings, according to its use, among printers. It is applied to the general body of journalism, which, for the sake of brevity, is called the Press; it is applied to the machine which produces the impression—the press; it is also applied, in a confined sense, to the operation of working the latter machine, which is called "press" in contradistinction to "case," which includes the various processes connected with the art of composition. With the first of these meanings we have little to do in this "Dictionary of Typography." The existing laws relating to the press, with a sketch of the rise and progress of the press will be found in previous pages. We shall simply refer to the *press* as a machine, and to *press* as the art of using that machine, under the heads respectively of PRESSES and PRESSWORK.

Press Bar.—The arm of the press to which the handle is attached.

Press Boards.—See PRESSING.

Press Book.—A book kept by the foreman of the press or machine-room in a large printing-office, in which entries are made of the amount of paper given out by the warehouseman for the various works, the number printed, &c., as well as the name of the pressman. The following is the form usually adopted:—

When given out to wet.	Names of Works.	No.	Signatures.	Date when laid on.	Names of Pressmen.
1871.					
Feb. 27	History of Printing	500	B.	March 1	Wilson.
Mar. 2	Æsop's Fables	7000	M.	March 4	Smith & Perkins.

Presses.—In England, as we have already explained (*vide* Machines, *ante*), this word has a limited meaning, being applied

exclusively to machines which are not automatic in their operation. In America and other countries what we call "machines" are called presses, and with much reason. The only classes of presses in use at the present time are—the Stanhope press, which is nearly obsolete, the Abion press, and the Columbian press. Each of these will be found described in its alphabetical place. Various manufacturers have made alterations more or less important in the construction of these presses, but the principle of their mechanism remains the same.

Press Goes.—When the press is properly at work it is said to "go."

Press Goes Easy.—When the run of the press is light, or when the pull is easy.

Press Goes Hard.—When the reverse to the above is the case. Paraffin oil has been found to possess good easy running qualities for oiling the ribs of presses.

Pressing.—Removing the inequalities on the surface of a sheet caused by the impression of the types, and rendering it as smooth as it was before being printed on. The sheets having been taken down from the drying poles, are carried to the warehouse. The warehouse boys then place them between exceedingly smooth, polished pasteboards, called glazed-boards. This operation, which is performed with great dexterity, is thus minutely described in "The American Printer":—"We will suppose the pasteboards to have sheets between them, which will be the case after they have once been used. The warehouse being provided with long tables or benches, secured to the wall, and a sufficient number of moveable tables about the size of the largest paper, the warehouseman places one of the small tables endwise against the long one, forming a right angle, upon which to lay the pressed sheets as they come out of the boards; the boy then takes his stand at the right side of the table, with the dry unpressed sheets at his right hand and the pasteboards at his left, somewhat elevated, leaving sufficient space before him to fill in the sheets. He then proceeds as follows: He first moistens the thumb of his right hand and reaches across to the pasteboard at his left, drawing one off with his thumb and placing it before him. He then catches a sheet of the dry paper also with his right hand and places it as near the centre of the pasteboard as possible, then twisting the body nimbly round to the left, he slides the pressed sheet from the pile of pasteboards to the table at his left side, and in resuming his former position, again draws off a pasteboard with his thumb; and so on, till the gross or bundle is filled. It is then laid aside, and another bundle filled and laid across the former, taking care always to keep the bundles separated until they are put in press, when they are separated by smooth boards made of cherry or other hard wood. The bundles being all filled in, the warehouseman proceeds to fill up the standing press, putting in one bundle at a time and placing a pressing-board between them; there should also be a stout plank introduced between the top board and the platen. In case the press should not hold quite as much as desired, more may be got in by unscrewing the press after it has once been screwed down. The press is finally screwed down as tight as possible. It should remain so for at least twelve hours, when it should be entirely emptied before the sheets are taken out of the boards. Care should be taken to keep the sides of the piles or heaps perfectly even."

Pressman. The workman who does the presswork. Printers are divided into two classes—compositors and pressmen—and in London boys are usually apprenticed to one or the other of these branches of the business; but in the Provinces, it is customary for an apprentice to be taught both. It consequently usually happens, especially in London and other large towns, that workmen understand only one part of the business, and are actually unable to do anything in the other. In small jobbing offices this is objectionable, as a compositor is expected to be able to do a plain job at press, pull a proof, &c., even although he is unacquainted with the more intricate departments of the art of press work. Pressmen have distinct trade societies of their own; that in London being called "The London Union of Pressmen." They have also several establishments termed "Gifts." These

Gifts are formed among a limited number of pressmen, for the purpose of introducing one another to a job, in preference to members of other gifts or pressmen generally. Each member of a Gift must be a Union man; and his subscription to the Gift includes the demand of the Union, which is handed over to the Secretary of the Union by the Secretary of the Gift. The London Union of Pressmen has communication with the various provincial societies of pressmen, and acknowledge tramps from the country, on production of their trade card. A movement is on foot for amalgamating the Machine Managers' and Pressmen's Societies with the London Society of Compositors, for trade purposes only, to be called the "London Amalgamated Letter-press Printers Defence Fund Association." A very unsatisfactory method of charging for their work is adopted by pressmen. They have no settled scale; but get what they can, according to the liberality or closeness of the establishment at which they are employed. Scarcely two houses in London pay the same prices; consequently there are frequent disputes at the end of the week. A plan, however, is adopted by some managers, of drawing up a list of prices to be paid for ordinary work, and shown to the pressman when engaged; this saves a deal of time and argument at the end of the week, when the pressman presents his bill. Some work, however, is of so intricate a nature, that it is advisable to be done by time-work. The rapid introduction of machinery of late years has caused a great diminution in the number of pressmen; but as a rule, good pressmen can always obtain plenty of work, and many of them find it advantageous to adopt the machine as a profession, on attaining the close of their apprenticeship.

Press Stands Still.—When the press remains unused from any cause, such as want of work, absence of pressmen, &c., it is said to stand still.

Presswork. This term includes the various operations connected with the actual impression of the sheet, and includes making-ready the forme as well as pulling, together with various minutiae which it would be impossible to detail. The following remarks, adapted from Savage's work, which is now becoming exceedingly rare, cannot be improved upon, and we commend them to the aspiring printer. Presswork is the art of producing perfect impressions from the surface of type or engravings in relief; that is, the subject transferred to paper should be an impression from the surface, and the surface only, of the types or engraved lines, of such a tone as to produce all the effect of which the subject is capable, without either superfluity or deficiency of colour. The press ought to be in the best condition, otherwise it will be impossible to get an equal impression without much trouble and loss of time. The joints of the tympan should not have any play, or the correctness of the register will be affected, and slurs and doubles be caused. The face of the platen ought to be a true plane, and parallel to the press stone or table. The advantage of having a good press is unavailing for the production of fine work if the types are much worn; for it is impossible to produce a sharp, clear impression when the type is worn and the fine lines rounded by much use. In consequence of this roundness of the letter it is necessary to use a thick blanket in the tympan to bring up the type; thus producing a gross irregular impression of more than the surface. A pressman should, as a matter of course, be well acquainted with the entire routine of presswork; in addition to which, to form his judgment, he should examine the most splendid productions of the press, and study them as patterns of workmanship. In making-ready it must be evident that, when a clear, sharp impression is wanted, the pressure should be on the surface only. Of course the tympan ought not to be very soft, neither should a woollen blanket be used; the most perfect impression will be obtained when fine thick paper alone is used; and even of this article but few thicknesses should be employed. After an impression is printed, the pressman examines if it is uniform throughout; if it be—which is very rarely the case—he goes on with the work; if not, he proceeds to overlay, in order to produce regularity of pressure and of colour over the whole forme. To produce presswork of a highly superior character, great expense and much time are required, and it is requisite to have a good press in

good condition; to have new types or types whose faces are not rounded by wear; to have good rollers in good condition; that the ink should be strong, of a full black colour that will not fade nor stain the paper, and ground so fine as to be impalpable; the paper should be of the best quality, made of linen rags and not bleached by acids or bleaching powders, which have a tendency to decompose the ink; the rolling should be well and carefully done; the face of the type should be completely covered with ink, without any superfluity, so as to produce a full colour; and the pull should be so regulated as to have a slow and great pressure, and to pause at its maximum in order to fix the ink firmly upon the paper. These particulars observed, with nothing but paper on the tympan, perfect impression of the face alone of the type will be obtained, and a splendid book will be produced in the best style of printing. Presswork includes making-ready the forme, rolling, pulling, arranging the tympan and frisket, over-laying, &c., all of which processes will be found described under their respective headings.

Proof.—A proof is a single impression of type matter, produced for the purpose of being submitted to the reader or author for examination and correction, so that all errors and imperfections in the composition may be ascertained before the work is sent to press. There are various kinds of proofs, viz.: the *first proof*, which, as its name indicates, is the first impression taken from the composed matter; the *revise*, which is the second proof and is compared with the first proof in order to see that all the corrections therein marked have been properly made; the *re-revise*, which is pulled for a similar reason; the *press proof*, which is the last proof but one, and is read with the most minute care to detect every error and fault; and, finally, the *press revise*, which is compared with the press proof, after which the work goes to press. The *fool proof* is the first proof with its imperfections marked on it; the *author's proof* is that which contains the author's corrections or alterations. A *clean proof* is one taken from matter that is quite correct as far as workmanship is concerned.

Proof Reading.—The art of correcting proofs (*See* READER). The following description of the *modus operandi* is adapted from the "Encyclopædia Britannica."—The Reader, having folded the proof in the necessary manner, first looks over the signatures, next ascertains whether the sheet commences with the right signature and folio, and then sees that the folios follow in order. He now looks over the running heads, inspects the proof to see that it has been imposed in the proper furniture, that the chapters are numbered rightly, and that the directions given have been correctly attended to, marking whatever he finds wrong. Having carefully done this, he places the proof before him, with the copy at his left hand, and proceeds to read the proof over with the greatest care, referring occasionally to the copy when necessary, correcting the capitals or Italics, or any other peculiarities, noting continually whether every portion of the composition has been executed in a workmanlike manner. Having fully satisfied himself upon these and all technical points, he calls his reading boy, who, taking the copy, reads in a clear voice, but with great rapidity, and often without the least attention to sound, sense, pauses, or cadence, the precise words of the most crabbéd or intricate copy, inserting without pause or embarrassment every interlineation, note, or side-note. The gabble of these boys in the reading room, where there are three or four reading, is most amusing, a stranger hearing the utmost confusion of tongues, unconnected sentences, and most monotonous tones. The Readers, plodding at their several tasks with the most iron composure, are not in the least disturbed by the Babel around them, but follow carefully every word, marking every error, or pausing to assist in deciphering every unknown or foreign word. This first reading is strictly confined to making for the proof an exact copy of the manuscript, and ascertaining the accuracy of the composition: consequently, first readers are generally intelligent and well educated compositors, whose practical knowledge enables them to detect the most trivial technical errors. Having thus a second time perused the proof, and carefully marked upon the copy the commencement, signature, and folio of the succeeding sheet, he sends it by his reading boy to the composing-room, to be corrected by the

workmen who have taken share in the composition. These immediately divide the proof amongst them, and each corrects that portion of it which contains the matter he has composed. When every compositor has corrected his matter, that one whose matter is last on the sheet locks it up, and another proof is pulled, which, with the original proof, is taken to the same first reader, who compares the one with the other, and ascertains that his marks have been carefully attended to, in default of which he again sends it up to be corrected; but should he find his revision satisfactory, he sends the second proof with the copy to the second Reader, by whom it undergoes the same careful inspection; but this time, most technical inaccuracies having been rectified, the reader observes whether the author's language be good and intelligible; if not, he makes such queries on the margin as his experience may suggest; he sends it up to the compositor, when it again undergoes correction, and, a proof being very carefully pulled, it is sent down to the same reader, who revises his marks and transfers the queries. The proof is then sent, generally with the copy, to the author for his perusal, who, having made such alterations as he thinks necessary, sends it back to the printing-office for correction. With the proper attention to these marks, the printer's responsibility as to correctness ceases, and the sheet is now ready for press. Such, at least, is the process of proof reading which ought to be adopted; but now, from the speed with which works are hurried through the press, the proofs are frequently sent out with but one reading, the careful press reading being reserved until the author's revise is returned. "Hansard's Typographia" (1825), p. 748, gives some useful remarks on this subject. It is always desirable that a Reader should have been previously brought up to the business as a compositor. By his practical acquaintance with the mechanical departments of the business he will be better able to detect those manifold errata, which, when suffered to pass, give an air of carelessness and inattention to his labours, that must always offend the just taste and professional discernment of all true lovers of correct and beautiful typography. Some of the principal imperfections which are most easily observed by the man of practical knowledge in the art of printing are the following, viz.: imperfect and wrong founted letters; inverted letters, particularly the lower-case *s*, the *n u*, and the *u n*; awkward and irregular spacing; uneven pages or columns; a false disposition of the reference mark; crookedness in words and lines; bad making-up of matter: erroneous indenting, &c. These minutiae, which are rather imperfections of workmanship than literal errors, are apt to be overlooked and neglected by those Readers who have no idea of the great liability there is, even with the most careful compositor, to fall into them—nay, the almost absolute impossibility of wholly avoiding them. A Reader ought not to be of a captious or pedantic turn of mind, the one will render his situation and employment extremely unpleasant, and the other will tempt him to habit, destructive of that consistency of character in his profession which he ought ever scrupulously to maintain. We are here alluding to a strict uniformity in the use of capitals, in orthography, and punctuation. Nothing, indeed, can be more provoking to an author than to see—for instance—the words honour, favour, &c., spelt with the *u* in one page, and, perhaps, in the next modernised, and spelt without that vowel. This is a discrepancy which correctors of the press should always carefully avoid. The like observations will apply to the using of capital letters to noun substantives, &c., in one place, and the omission of them in another. Whatever may be the different opinions or practices of authors in these respects, the system of spelling, &c., must not be changed in the same work. The reading-boy should be able to read with ease and distinctness any copy put into his hands, and he should be instructed not to read too fast, but to pay as much attention to what he is engaged on as if he were reading for his own amusement or instruction. The eye of the Reader should not follow, but rather go before, the voice of the reading-boy; for, by a habit of this nature, a Reader will, as it were, anticipate every single word in his copy; and when any word or sentence happens to have been omitted in the proof, his attention will the more sensibly be arrested by it, when he hears it pronounced by his reading-boy. Great care, however, ought to be paid, least the eye of the Reader should go too far before the

words of his reading-boy. For as he will be apt to be attending to the meaning of his author, he will read words in the proof which actually do not appear there, and the very accuracy of the reading-boy will but tend to confirm him in the mistake. In revising a proof-sheet, particular care must be taken that none of the fresh errors escape, which compositors often make in the course of correcting the original ones. To avoid this, the Reader ought not only to pay attention to the particular word which has been corrected, but always to read over with care the whole of the line in which that word is to be found. This is particularly necessary in cases where it has been requisite for the compositor to alter irregular or slovenly spacing; for in raising the line in the metal for that purpose, there is very great danger of some word or letter falling out, or some space being put into a wrong place. In offices where more Readers than one are employed it is always advisable that a proof-sheet should be read over by at least two of the Readers. The eye in going over the same track is liable to be led into the same mistake or oversight. The interest excited by the first or second reading having abated, a degree of listlessness also will steal upon the mind, extremely detrimental to correctness in the proof. It ought always to be remembered that the part of the copy which contains the connecting matter of the ensuing sheet must either be retained, or carefully transcribed, or read off, a proof of that matter having been pulled for that purpose. Authors are very apt to make alterations, and to correct and amend the style or arguments of their works when they first see them in print. This is certainly the worst time for this labour, as it is necessarily attended with an expense which, in large works, will imperceptibly swell to a large sum; when, however, this method of alteration is adopted by an author, the Reader must always be careful to read the whole sheet over once more with very great attention before it is finally put to press. A proof-sheet having duly undergone this routine of purgation, may be supposed as free from errata as the nature of the thing will admit, and the word "Press" may be written at the top of the first page of it. This is an important word to every Reader if he have suffered his attention to be drawn aside from the nature of his proper business, and errors should be discovered when it is too late to have them corrected. This word "Press" is as the signature of the death-warrant of his reputation; and if he is desirous of attaining excellence in his profession will occasion an uneasiness of mind which will but ill qualify him for reading other proof-sheets with more care and correctness. A Reader should, therefore, be a man of one business, always upon the alert, all eye, all attention. Possessing a becoming reliance upon his own powers, he should never be too confident of success. Imperfection clings to him on every side, errors and mistakes assail him from every quarter. His business is of a nature that may render him obnoxious to blame, but can hardly be said to bring him in any very large stock of praise. If errors escape him he is justly to be censured, for *perfection is his duty*. If his labours are wholly free from mistake, which is, alas, a very rare case, he has done no more than he ought, and consequently can merit only a comparative degree of commendation, in that he has had the good fortune to be more successful in his labours after perfection than some of his brethren in the same employment. No Reader should suffer his proofs to go to press, where there have been any material errata, without their receiving a last revision by himself. If he is doubtful of himself and diffident of his own powers of attention, how much more ought he to be on his guard respecting the care and attention of others! He should make it a rule never to trust a compositor in any matter of the slightest importance—they are the most *erring* set of men in the universe. In the final operation of revising a form for press, the eye must be cast along the sides and heads of the respective pages least any letter should happen to have fallen out, any crookedness have been occasioned in the locking-up of the forme, or any battered letters have been inserted. These are the qualifications of a Reader; this the business of one employed as a Corrector of the Press. It is an arduous employment, an employment of no small responsibility, and which ought never to be entrusted to the intemperate, the thoughtless, the illiterate or the inexperienced. "Chambers's Encyclopedia," Vol. III., p. 255, has an article on Correction of the Press. In printing regular

volumes, one sheet is usually corrected at a time; but where extensive alterations, omissions, or additions are likely to be made by writer or editor, it is more convenient to take the proofs on long slips, before division into pages. The thankless and monotonous business of a Corrector or Reader is more difficult than the uninitiated would believe. It requires extensive and varied knowledge, an accurate acquaintance with the art of typography, and, above all, a peculiar sharpness of eye, which, without losing the sense and correction of the whole, takes in at the same time each separate word and letter.

Printing.—For the leading events in the history of the art, see ANNALS OF PRINTING; for an account of the different descriptions of printing, see IMPRESSION.

Printing Ink.—See INK.

Proof Paper.—Any description of paper used for pulling proofs on. When a proof is required on the paper which is to be used for a work, the direction is given to "pull it on its own paper." A certain quantity of proof paper should be kept wetted down, so that it may always be ready for use. The best paper for pulling proofs on is a thin but hard paper; it should be stout enough to bear writing on, so that the proof reader's and author's corrections may be made on it.

Proof Press.—A press set apart for pulling proofs. An old press is generally used for this purpose; one that has seen good service in its day, but not thoroughly worn out. In many offices an old Stanhope (now out of date) answers the purpose admirably. Slip proofs are pulled on a galley press (*q. v.*).

Pull.—The act of printing an impression of the press. Pressmen technically term the amount of force on the impression "the pull," *i. e.*, if a forme has too light an impression, he puts "more pull" on; if too heavy an impression, he takes some of the "pull" off.

Pull a Proof.—To print an impression intended as a proof. On newspapers the compositors pull their own proofs in slips on galleys, taking it by turns to do so. It is usual for the companionship to have a piece of wood—sometimes a piece of furniture—with the word "pull" printed on a piece of paper and stuck on. This is passed on from frame to frame as often as a proof is pulled, and is called the "Pull-stick; it denotes that the party holding it is to pull the next proof. In large book-houses a pressman is employed on the 'stab to pull all proofs.—See PROOF.

Punctuation.—We condense from Murray's Grammar the following rules connected with this subject, as they will be found more concise than any other. Those who wish to pursue the subject would do well to possess themselves of Beadnell's "Guide to Typography," or Wilson's "Treatise on Punctuation," which are the fullest and most comprehensive handbooks on punctuation which has yet appeared.

Punctuation is the art of dividing a written composition into sentences by points or stops, for the purpose of marking the different pauses which the sense and an accurate pronunciation require.

The comma represents the shortest pause; the semicolon a pause double that of the comma; the colon double that of the semicolon; and the period double that of the colon.

The COMMA.—The comma usually separates those parts of a sentence which, though very closely connected in sense and construction, require a pause between them.

Rule 1st.—With respect to a simple sentence, the several words of which it consists have so near a relation to each other that in general no points are requisite, except a full stop at the end of it, as, "The fear of the Lord is the beginning of wisdom."

Rule 2nd.—When the connection of the different parts of a simple sentence is interrupted by an imperfect phrase, a comma is usually introduced before the beginning and at the end of the phrase, as, "I remember, with gratitude, his goodness to me." "His work is, in many respects, very imperfect."

Rule 3rd.—When two or more nouns occur in the same construction, they are parted by the comma, as, "Reason, virtue, answer one great aim." From this rule there is mostly an exception, with regard to two nouns closely connected by a conjunction, as, "Virtue and vice form a strong contrast to each other."

Rule 4th.—Two or more adjectives belonging to the same substantive are likewise separated by a comma, as, "Plain, honest truth, wants no artificial covering." But two adjectives, immediately connected by a conjunction, are not separated by a comma, as, "True worth is modest and retired."

Rule 5th.—Two or more verbs having the same nominative case, and immediately following one another, are also separated by commas, as, "Virtue supports in adversity, moderates in prosperity." Two verbs immediately connected by a conjunction, are an exception to the above rule, as, "The study of natural history expands and elevates the mind." Two or more participles are subject to a similar rule and exception, as, "A man, fearing, serving, and loving his Creator."

Rule 6th.—Two or more adverbs immediately succeeding one another must be separated by commas, as, "We are fearfully, wonderfully framed." But when two adverbs are joined by a conjunction, they are not parted by a comma, as, "Some men sin deliberately and presumptuously."

Rule 7th.—When participles are followed by something that depends on them, they are generally separated from the rest of the sentence by a comma, as, "The king approving of the plan, put it in execution."

Rule 8th.—When a conjunction is divided by a phrase or sentence from the verb to which it belongs, such intervening phrase has usually a comma at each extremity, as, "They set out early, and before the close of the day, arrived at the destined place."

Rule 9th.—Expressions in a direct address are separated from the rest of the sentence, as, "My son, give me thy heart."

Rule 10th.—The case absolute, and the infinitive mood absolute, are separated by commas from the body of the sentence, as, "His father dying, he succeeded to the estate."

Rule 11th.—Nouns in apposition, that is, nouns added to other nouns in the same case by way of explication or illustration when accompanied with adjuncts, are set off by commas, as, "Paul, the Apostle of the Gentiles, was eminent for his zeal and knowledge." But if such nouns are single, or only form a proper name, they are not divided, as, "Paul the Apostle."

Rule 12th.—Simple members of sentences connected by comparatives, are for the most distinguished by a comma, as, "As the hart panteth after the water brooks, so doth my soul pant after thee." If the members in comparative sentences are short, the comma is in general better omitted, as, "How much better is it to get wisdom than gold."

Rule 13th.—When words are placed in opposition to each other, or with some marked variety, they require to be distinguished by a comma, as, "Though deep, yet clear; though gentle, yet not dull." Sometimes when the word with which the last preposition agrees is single, it is better to omit the comma before it, as, "Many states were in alliance with, and under the protection of, Rome." The same rule and restriction must be applied when two or more nouns refer to the same proposition, as, "He was composed both under the threatening and at the approach of a cruel and lingering death."

Rule 14th.—A remarkable expression, or a short observation somewhat in the manner of a quotation, may be properly marked with a comma, as, "It hurts a man's pride to say I do not know."

Rule 15th.—Relative pronouns are connective words, and generally admit a comma before them, as, "He preaches sublimely, who lives a sober, righteous, and pious life." But when two members, or phrases, are closely connected by a relative, restraining the general notion of the antecedent to a particular sense, the comma should be omitted, as, "Self-denial is the sacrifice which virtue must make." The fifteenth rule applies equally to cases in which the relative is not expressed but understood, as, "It was from piety, warm and unaffected, that his morals derived strength."

Rule 16th.—A simple member of a sentence contained within another, or following another, must be distinguished by the comma, as, "To improve time whilst we have health, will smooth the bed of sickness." If, however, the members succeeding each are very closely connected, the comma is unnecessary, as, "Revelation tells us how we may attain happiness." When a verb in the infinitive mood follows its governing verb with several words between them, those words should generally have a comma at the end of them, as, "It ill becomes good and wise men to oppose and degrade one another." Several verbs in the infinitive mood having a common dependence and succeeding one another, are also divided by commas, as, "To relieve the indigent, to comfort the afflicted, to protect the innocent, to reward the deserving, is a humane and noble employment."

Rule 17th.—When the verb, to be, is followed by a verb in the infinitive mood, which, by transposition might be made the nominative case to it, the former is generally separated from the latter verb by a comma, as, "The most obvious remedy is, to withdraw from all associations with bad men."

Rule 18th.—When adjuncts or circumstances are of importance, and often when the natural order of them is inverted, they may be set off by commas, as, "Virtue must be formed and supported not by infrequent acts, but by daily and repeated exertions."

Rule 19th.—When a verb is understood, a comma may properly be introduced. This is a general rule, which, besides comprising some of the preceding rules, will apply to many cases not determined by any of them, as, "From law arises security; from security, curiosity; from security, knowledge."

Rule 20th.—The words, may, so, hence, again, first, secondly, formerly, now, lastly, once more, above all, on the contrary, in the next place, in short, and all other words and phrases of the same kind, must generally be separated from the context by a comma, as, "Remember thy best and first friend; formerly, the supporter of thy infancy and the guide of thy childhood; now the guardian of thy youth, and the hope of thy coming years."

The SEMICOLON is used for dividing a compound sentence into two or more parts, not so closely connected as those which are separated by a comma, nor yet so little dependent on each other as those which are distinguished by a colon.

The COLON is used to divide a sentence into two or more parts, less connected than those which are separated by a semicolon; but not so independent as separate distinct sentences.

The PERIOD.—When the sentence is complete and independent, and not connected in construction with the following sentence, it is marked with a period.

The DASH.—Though often used improperly by hasty and incoherent writers, may be introduced with propriety, where the sentence breaks off abruptly, where a significant pause is required, or where there is an unexpected turn in the sentiment, as, "If thou art he, so much respected once—but, oh! how fallen! how degraded!"

The INTERROGATION.—A note of interrogation is used at the end of an interrogative sentence, that is, when a question is asked, as, "Who will accompany me?"

The EXCLAMATION.—The note of exclamation is applied to expressions of sudden emotion, surprise, joy, grief, &c., and also to invocations or addresses, as, "My friend! this conduct amazes me!"

The PARENTHESES.—A parenthesis is a clause containing some necessary information or useful remark introduced into the body of a sentence; obliquely, and which may be omitted without injuring the construction, as, "Know then this truth (enough for man to know); virtue alone is happiness below."

Q.

Quads.—An abbreviation of quadrats.

Quadrats.—Pieces of type metal, of the depth of the body of the respective sizes to which they are cast, but lower than types, so as to leave a blank space on the paper, when printed where they are placed. An en quadrat is half as thick as its depth; an em quadrat is equal in thickness and depth, and being square on its surface, is the true quadrat (from *quadratus*, squared); a two em quadrat is twice the thickness of its depth; a three em three times, a four em four times, as their names specify. Four ems are the largest quadrats that are cast. They are used to fill out short lines to form white lines, and to justify letters, figures, &c., in any part of the line or page. Four-em quadrats are rarely cast larger than Pica. English and Great Primer do not exceed three ems, nor does Double Pica exceed two ems. In casting em and en quadrats the utmost exactness is necessary: they also require particular care in dressing, as the most trifling variation will instantly be discovered when they are ranged in figure work; and unless true in their justification, the arrangement will be so irregular, that all the pains and ingenuity of a compositor cannot rectify it. The first line of a paragraph is usually indented an em quadrat, but some printers prefer using an em and en, two, or even three ems for wide measures. An em quadrat is the proper space after a full point when it terminates a sentence in a paragraph. En quadrats are generally used after a semicolon, colon, &c., and sometimes after overhanging letters. Circular or curved quadrats are made

of various sizes so as to form circles from one to twenty-four inches in diameter; each piece is exactly one eighth of a full circle, and when combined with similar pieces, will form quarter, half, three-quarter, and full circles. By reversing the combination of some of the pieces, serpentine and eccentric curves may be made of any length or depth. These curvilinear quadrats are of two kinds—inner quadrats with convex surface, and outer quadrats with concave surface. The curved line is produced by placing the convex and concave surfaces parallel to each other, so that when locked up firmly they hold the type inserted between them. The other sides of the quadrats are flat and right-angled, to allow a close introduction of type, and an easy justification with ordinary type. Select two outer quadrats (each marked with the same number), join the smaller ends and justify the extremities carefully with ordinary quadrats, set the line of type in the hollow of the curve, but without justification, then insert two inner quadrats (of the same number) of smaller size than the outer quadrats—the size of the inner quadrats will depend upon the size of the type. A line, a canon for instance, will require smaller inner quadrats than will be needed for a line of Pica, and *vice versa*. As the one increases the other diminishes. An ordinary cloek dial will afford a good illustration. The space between the numeral X and I, is one fourth of a circle. The curved line described around the foot of these numerals, is much less than the curve at the top; if the size of the numerals from X to I is decreased, the inner curve will be greater; if it is increased, it will be less. This will explain why the inner quadrat should be of less size than the outer, and why it should diminish as the size of the type increases. The curve of the inner quadrat should be perfectly parallel with the curve of outer quadrat. When they are parallel they bind the type between firmly in every part. Then justify the line of type. As the sizes of type vary with different foundries, it will often be found that the inner quadrat of the nearest suitable size will not meet the type in every part. This difficulty may be obviated by introducing slips of the same length as the line of type. This increases the distance between the quadrats until the curved surfaces are perfectly parallel with each other. The line of type cannot be justified, unless they are parallel. When the inner and outer quadrats are thus adapted to each other, they not only bind the type firmly, but will also present a perfect surface on the other side. Unless they are parallel on the inner sides, and flat and square on the outer sides, the justification is not good; and the remedy must be found in changing the size of the inner circle, or in increasing the distance between the curved lines by the use of large type, or by paper or card-board. When thus composed the type will be perfectly tight and secure, and the curved white line strictly accurate. As the quadrats are perfect segments of a large circle, they cannot be increased or diminished without destroying the truth of the curve. If the thin ends are pierced out with common quadrats, good justification will be rendered impossible. If they are shortened by cutting of them, they are ruined bits of lead; or short pieces of card between the curved surfaces are also wrong; they destroy that exact parallelism which is necessary for the security of the type. Very accurate justification of the outer extremities of the quadrats is also indispensable. If the curved surfaces are kept parallel, and the flat surfaces kept square, no difficulty will be found in using them: and they will prove a valuable aid in ornamental printing.

Quarters.—Quartos, octavos, sixteens, and thirty-tvos formes, are imposed in quarters. They are called quarters, not from their equal divisions, but because they are imposed and locked up apart.

Quarto.—A sheet of paper folded in four leaves, or eight pages, is styled a quarto.

Quire.—A quire of paper, for all usual purposes, consists of twenty-four sheets; but for newspapers, a quire consists of twenty-five sheets, and a ream of twenty quires contains five hundred sheets.

Quoin a Forme.—The fitting of the quoins in a forme so that when it is locked-up they shall, in the most efficacious manner, wedge up and secure the types.—See IMPOSING.

Quoin-Drawer.—A drawer in the frame of the imposing-stone in which quoins are kept. It is generally the right hand top drawer when you stand at the front of the stone.

Quoin-Drawer Overseer.—A compositor who takes charge of the store-closet, and makes up the furnitures for the first sheets of a work.

Quoins.—Short pieces of beech wood made of the same height as furniture, and tapering in their width to wedge the pages up with in the chase. They are made of a variety of widths, from about two inches to less than a quarter of an inch, for the convenience of having every gradation in quoining a forme.

Quotation.—(“”). Two inverted commas, generally placed at the beginning of a phrase or a passage which is quoted or transcribed from the speaker or author in his own words; and two apostrophes in their direct position are placed at the conclusion, as, “The proper study of mankind, is man.”

R.

Racks.—See BOARD-RACK and CASE-RACK.

Ranks.—From the frames in a composing-room being placed in a row, the compositors are said to be in the ranks; thus, if a compositor has been selected for a reader or overseer, and he afterwards works at the case as a compositor, it is said he is come to the ranks again.

Rat.—Savage defines this opprobrious epithet, thus:—“A compositor or pressman who executes work at less than the regular prices, or for less than the generality of the trade think it deserves, or for less than the Chapel decides it ought to be paid, or for less than others are paid for it, becomes what is termed a rat. The most miserable situation, perhaps, that a workman can be placed in. He is hooted at and despised by the rest of the workman in every house where he may obtain employment; and this feeling towards him does not subside, for the opprobrious epithet accompanies him for life.” Unfair workman are also styled “Gentlemen of the Long-tail Order;” and dead rats, kittens, &c., are sometimes laid about their frames to annoy them.

Rat-hous.—A printing-office where unfair workmen are employed.

Reader.—See PROOF READER.

References.—There are various references used for notes, according to the fancy of the author, or the master printer, where they are not numerous in a page. The common references generally used in this order:—*, †, ‡, §, ¶, and where there are more than six notes in a page, two of each reference are put to a note; but this is looked upon as having an unsightly appearance. Italic lower-case letters are sometimes used, enclosed between parentheses (a), and sometimes figures (1). The letters, when they are used, are often continued through the alphabet, and then commence again with (a). The most usual references, and which are esteemed the neatest, are superiors, both letters and figures. Where the notes are at the foot of the page, letters are most frequently used, sometimes going through the alphabet, and sometimes commencing with a in each page in which notes occur. When the notes are placed at the end of the volume, figures¹ are nearly always adopted in regular succession.

Register.—This term implies such an arrangement of the marginal furniture in both forms of a sheet as that, when printed off, the pages shall fall precisely at the back of each other, so that the sides and heads of the pages of one forme shall not project beyond those of the other. In fine work the principle is carried still further, and the whites in the pages are so arranged that line shall fall upon line when the reiteration is worked.

Reglet.—A sort of furniture of an equal substance all its length. It is quadrat high of several thicknesses, viz., Pearl, Nonpareil, Brevier, Long Primer, Pica, Great Primer, Double Pica, Two-line English, and Two-line Great Primer. Reglet and furniture as well as side-sticks,* are made in lengths of three

* Side and footsticks are also made to certain sizes to suit various formes.

feet each, and are always styled lengths of reglet, lengths of furniture, &c. Reglet is used principally for making margin in imposing a forme; also for spacing out the lines of a broadside or other large page; it also is often used to branch out titles, jobs, and other matter, in order to economise the use of quadrats. In the absence of metal clumps, it is preferable to quadrats for this purpose, as it keeps the lines more even, especially if a wrong fount space or quad happens to get in.

Revise.—The impression of each forme, printed on proof paper the first thing after it is laid on, and taken by the pressman to the reader or overseer for him to examine that all the corrections in the press-proof are made, previously to the forme being worked off. The compositor frequently takes a revise for waste paper; but this should never be done with that of the first forme; the pressman should put it into his heap so that it can be readily found. It is thus kept damp, and the revise of the second forme ought always to be pulled on it. The reader in revising the second forme then sees the sheet perfect, which is necessary to enable him to ascertain that the matter follows, and that the furniture is right.—See PROOFS.

Rider.—When an author adds a paragraph or sentence to his proof and manuscript, it is called Rider A, Rider B, &c.

Rides.—Leads are said to ride when one end projects over another. This will occasionally take place when two or more leads are used in the same measure. It ought to be guarded against, as when it happens it prevents the page lifting; or if, by tightening the quoins, the forme is made to rise, it causes the lines to be crooked.

Rimmed Letters.—A series of fancy types, of Roman and Old English characters, designed originally in America. Their peculiarity consists in their having a thin line or rim around the ordinary face. They present a very light and graceful appearance, and are at the same time exceedingly distinct. The following is a specimen:—

Printing Materials

Rinse the Forme.—Laying-up the forme and washing the ley and ink away to make the letter clean. This should always be done by the pressman as soon as a forme is off, by taking it to the ley trough and brushing the ink from off the face of the letter, the furniture, and chase, with the ley brush and ley. He should lift it out of the trough and place it standing on its edge in the sink or trough and resting against some support, and rinse it well with water to wash away the ley and the ink it has dissolved; the face of the letter, the furniture, and the chase are thus made clean ready for the compositor to lay up, preparatory to distributing.—See LAYING-UP.

Rinsing Trough.—The trough in which formes are rinsed in is a combination of two troughs. The smallest and deepest contains the water, and in some offices has an iron ladle chained to the near upper corner to prevent its being displaced; the shallow part being used to lay up the forme in. They are both lined with lead, and the shallow one has a loose deal bottom to preserve the lead, and in general is bound with iron, particularly at the front, to prevent the edge of a chase when being lifted upon the letter-board from cutting the lead. They both have an opening with a short pipe at the bottom to convey away the water, that in the water trough having a brass plug in it for the convenience of letting the water off to clean it out. They stand on a frame which is usually placed on a platform raised at the edge a few inches lined with lead styled the sink, with a loose bottom of boards which leads into a pipe for drainage.

Roller.—A hollow wooden cylinder covered with composition which, set in an iron frame, revolves upon a rod and is used for inking type. The test of a good roller is: It should be moderately soft to the touch, yet perfectly elastic and strong in texture. It should shrink but little, and yet last a considerable time. To know when a roller that has been recently made or washed is in order, grasp it gently with the hand, or pass the ends of the fingers along its surface lengthwise. If it is in a raw, sticky condition, it is yet "green," and must not be used. If it appears only moderately adhesive and pliant, but uniformly

so, escaping from the fingers without showing a mark from them, and with a smooth rebound, the roller is in good condition, and is best if mounted and charged with ink at once. A large poster or newspaper forme, or any large forme with old type, will require a soft roller with much suction. Book-work, wood-cuts, or fine job-work will require a harder roller, with a very smooth, elastic, and clinging surface. Coloured inks are best printed with a still harder roller and with much less suction. All rollers should be perfectly clean and free from all cracks and holes. The suitability of these rollers cannot be explained by words; such a knowledge will be best acquired by observation and experience. It may, however, be necessary to state that one roller will not do for all sorts of presswork; the quality of the work, the size and condition of the type, and the speed of the press must guide the pressman in his choice. During the past few years various substitutes for the ordinary composition have been introduced. The most successful of these is that invented by Messrs. S. Moulton and Co., of Bradford-on-Avon. It is called the "Moss" Rubber Inking Roller, and is composed of a new and homogeneous material of the consistency of moss, and hermetically sealed in a smooth skin of specially-prepared india rubber. The advantages claimed for these rollers, as compared with the ordinary composition rollers, are: Their great durability, on account of the unchangeable nature of the material; they are wholly unaffected by any temperature; they are not damaged by use on brass rule; they are permanently soft and elastic; and they can be used immediately after being washed.—To make composition rollers, put the glue in a bucket or pan and cover it with water; let it stand until more than half penetrated with the water, taking care that it shall not soak too long, and then pour it off and let it remain until it becomes soft, when it will be ready for the melting kettle. This is a double vessel like a glue kettle. Put the soaked glue into the inner vessel, and as much water in the outer boiler as it will contain when the inner vessel is placed in it. When the glue is all melted (if too thick add a little water), the molasses may be slowly poured into it and well mixed with the glue by frequent stirring. When properly prepared, the composition does not require boiling more than an hour. Too much boiling candies the molasses, and the roller consequently will be found to lose its suction much sooner. In proportioning the material much depends upon the weather and temperature of the place in which the rollers are to be used. Eight pounds of glue to one gallon of sugar-house molasses or syrup is a very good proportion for summer, and four pounds of glue to one gallon of molasses for winter use. For hand-press rollers more molasses should be used, as they are not subject to so much hard usage as cylinder-press rollers, and do not require to be as strong, for the more molasses that can be used the better the roller. Before casting a roller the mould should be perfectly clean and well oiled with a swab, but not to excess, as too much oil makes the face of the roller seamy and ragged. The end pieces should then be oiled, and together with the cylinder placed in the mould, the upper end piece being very open to allow the composition to pass down between the interior of the mould and the cylinder. The cylinder must be well secured from rising before the composition is poured in, by placing a stick upon the end of it sufficiently long to reach above the end of the mould, and be tied down with twine. The composition should be poured very slowly and in such a manner as to cause it only to run down one side of the cylinder, allowing the air to escape freely up the other. If the mould be filled at night the roller may be drawn the next morning, but it should not be used for at least twenty-four hours after, except in very cold weather. To determine when a roller is in order for working, press the hand gently to it; if the fingers can be drawn lightly and smoothly over its surface, it may be said to be in order; but should it be so adhesive that the fingers will not glide smoothly over its surface, it is not sufficiently dry and should be exposed to the air. Rollers should not be washed immediately after use, but should be put away with the ink on them, as it protects the surface from the action of the air. When washed and exposed to the atmosphere for any length of time they become dry and skippy. They should be washed about half-an-hour before using them. In cleaning a new roller, a little oil rubbed over it will loosen the ink, and it should be scraped clean with the back of

a case-knife. It should be cleaned in this way for about one week, when ley may be used. New rollers are often spoiled by washing them too soon with ley. Camphine may be substituted for oil, but owing to its combustible nature it is objectionable, as accidents might arise from its use. Mr. Hansard, an eminent English printer, says: "Take glue made from the cuttings of parchment or vellum, fine green molasses, pure as from the sugar refiners, and a small quantity of the substance called Paris White, and you will have every ingredient requisite for good composition. The proportion as follows: Glue, 2 lbs.; molasses, 6 lbs.; Paris White $\frac{1}{2}$ lb. Put the glue in a little water for a few hours to soak; pour off the liquid, put the glue over the fire, and when it is dissolved add the molasses, and let them be well incorporated together for at least an hour; then with a very fine sieve mix the Paris White, frequently stirring the composition. In another hour or less it will be fit to pour into the mould. Various patented compositions for rollers may now be had from printers' brokers.

Roller Stock.—The wooden cylinder upon which the composition is fixed.

Rotary Printing Machines.—Machines in which the forme of type is placed on the surface of a horizontal revolving cylinder, the impression cylinders being situated around it. Of this description are the Bullock Machine, the Hoe Machine, and the Marinoni Machine, already described, as well as the Walter Press (*q.v.*). The latest invention in this class of machine is that of Messrs. Duncan & Wilson, of Liverpool, who have just brought out the "Victory" Machine. A description of this says:—

As America had the honour of introducing, or at least popularising, the rotary principle, France more recently bore off the palm of mechanical ingenuity. The Hoe machine prints only one side of the paper at once; the Marinoni press prints both sides at one operation; thus by the Marinoni process as many perfect papers are produced per hour as there are half newspapers printed by the Hoe system, or, in other words, there is double speed in the newer method. Though the best yet invented, it must be confessed, however, that the Marinoni press still fails to economise as largely as journalists desire. What was wanted was a self-acting press—one that would feed itself without the intervention of manual labour, and deliver the printed newspaper by the same inexpensive agency. For if one of the present machines is, say, a six-cylinder press, it employs six men to keep up a constant supply of clean paper to be printed. In these days of penny journalism the great desideratum is rapid and cheap production. The first condition to the realisation of this hope seems to be the avoidance of the prevailing necessity of printing the newspaper in separate sheets. What was wanted was a plan whereby the type, or rather the stereotype plates, should be placed on revolving cylinders over which should be passed an endless band or paper, much on the same principle as in calico printing. The great difficulty, however, has been the discovery of some satisfactory process of dividing the paper when printed into the required lengths, so that each piece should form one newspaper. Messrs. Duncan & Wilson, of Liverpool, have been making patient experiments in the hope of contriving a press to print from a continuous band of paper, and after many failures they now appear to have hit upon a method that promises to revolutionise the printing business. It combines two distinct processes, that of printing and folding. A great roll of paper, even a mile in length, is placed over the machine, and is gradually unwound as it passes over the type; it is then divided by a revolving knife into separate pieces, each being a complete newspaper, and these are finally carried into a series of rollers, which fold them ready for delivery to the subscribers. In other words, a band of paper in the same state as when it leaves the paper-mill passes through the "Victory" press, and comes out folded newspapers without a human hand having touched it.

Rounce.—The handle for running in and out the carriage of a press.

Ruby.—The name of a type next in size larger than Pearl and smaller than Nonpareil in body. It is the half of Small Pica. Mr. Hansard, in his "Typographia," gives the following account of its origin and name:—"It was, in fact, originally a Nonpareil with short ascenders and descenders cast on a smaller body, or sometimes a Pearl on a larger, to look open; but now, some founders have a distinct specimen for this size. This name has but very lately been adopted in the typefounders' specimens; but some years ago it was found by the writer of this absolutely

necessary to give some distinguishing appellation to this size, as the letter-founders had given him one nick Pearls of two bodies, viz., one fourth half Small Pica another half Long Primer. The mistakes arising from this circumstance, in a house much in the habit of using small type, occasioned the expedient of inventing a new name; and as the neighbouring sizes were called Pearl and Diamond, it seemed not very inapplicable to take the name of Ruby."

Rules.—See BRASS RULES.

Ruling.—The process of staining paper with lines to guide the hand in writing, or for classification, as in columns of money, weights, &c. "Feint Ruling" consists of making horizontal parallel lines in a pale blue; "feint and common" includes the feint ruling and the red, for head lines, money columns, &c.

Ruling Machine.—A machine for mechanically performing the operation of ruling. The sheets to be ruled are fed into the machine as in the case of a cylinder press. They are received on a long revolving web of linen, which carries them to the pens which are fixed on a narrow board. When the paper reaches them they are let down, and the paper moving underneath receives the ink and the lines are formed. The pens are supplied with ink from a wetted woollen or flannel substance above them. The ink used is something like writing ink. Formerly ruling machines were made exclusively of wood, but now they are frequently composed of iron.

Runs on Sorts.—A phrase used when a job requires an inordinate proportion of particular letters or sorts.

Running Title.—The title of the book or subject placed at the top of the page.

S.

Sand Bag.—A flat leather bag filled with sand, used by engravers to form a pad to rest the block upon and to enable them to turn the block easily. This facility of turning the block round is most valuable, and the more the pad has been used the more readily does it work.

Sanseriff.—Jobbing type without serifs, as seen in the accompanying specimen:—

BOOKBINDER & STATIONER

Sanspareil.—A peculiar system of manufacturing large metal jobbing types, invented by the late Mr. J. H. Crutchfield, and still carried on by his son and a few others. The superiority of producing metal types by this process is evidenced by the smooth and beautiful face it shows, and the length of time a matrix will last, whereas sand-cast types require every type to be finished after casting.

Saw.—An instrument used for cutting reglet, furniture, &c.

Saw Block.—A block of wood notched in certain directions to guide the saw in cutting up and mitring furniture, &c.

Scale.—The prices agreed upon to be paid by master printers and accepted by the men, has been drawn up to a certain scale, and in casting-up matter the compositors do so according to the scale, which is published by the London Society of Compositors, and may be obtained at their offices, Racquet-court, London, price sixpence.

Scaleboard.—Thin strips of wood similar to reglet, but of the thickness of leads—4-to-pica, 6-to-pica, 8-to-pica, &c. It is used in making register, and is preferable to leads, which are apt to get battered or broken.

Scale of Typefounders' Measurement.—The following is written by Mr. P. M. Shanks, of the Patent Type Founding Company:—

It is much to be regretted, that in consequence of the want of combined action on the part of the English printers no definite scale for the sizes of the bodies of types exists. Founders agree (with one exception) that the Pica shall be one-sixth of an inch; that two Nonpareils shall be equal to one Pica; two Pearls to one Long Primer; two Diamonds to a Bourgeois; but beyond this there is no relation

between one body and another, and each founder seems to make it a matter of principle that the dimensions of Long Primer, Bourgeois, &c., shall differ materially from the nominally similar bodies of every other house. In France this state of things does not exist. Many years ago, by common consent of the printers, through their Trade Council, the Chambordes Imprimeurs, a definite standard was adopted, and the founders are obliged to conform to the rules laid down, so that from whatever source obtained, the type of a given body is of uniform dimensions. The evils of the want of such a system was recognised and remedied even as early as 1730. Fournier, in establishing his foundry, determined to put an end to the confusion that then prevailed among the French founders, as in our own. The plan he adopted is the basis of that which now universally prevails. He took two inches as his standard measure which he called his Prototype, and divided these into twelve parts, which he called lines, and each of these again into twelve parts, which he named Points, thus forming one hundred and forty-four divisions. To apply this in practice, he assigned to each body a definite number of Points. Thus the body Cicero, corresponding to our Pica, was twelve points, and it was rendered exactly of these dimensions by laying twelve Cicero types on the two-inch standard, and dressing them until they exactly fitted the required space. Nonpareil, half a Cicero, was six points, so that in dressing this body twenty-four had to be made to fill the Prototype. Leads were made to a certain number of points, and thus any body worked with another without justification. Fournier's standard is still that used in the Imprimerie Imperiale, but it was modified by Didot, who adopted as his Prototype, or Typometre, as it has since been called, a definite portion of the metre, and thus brought type-founders under the French decimal system of measurement. An attempt was made some years ago by Messrs. Bowers, of Sheffield, to introduce in England a similar system; the chief objection to its introduction arose from its discrepancy between the new bodies and those of the other founders. The Patent Type Founding Company, in introducing their Patent Hard Metal in 1854, laid down a system of measurement which appears to us deserving of the attention of printers. Without deviating from the usual sizes of bodies more than the other founders differ from each other, a scheme of bodies has been formed which possesses all the advantages of the French system. The standard taken by the Company is the Pica Type, which is divided into twenty points, and to each body is arranged a certain number of these points, thus:—

BODY.	PICAS.	POINTS.	BODY.	PICAS.	POINTS.	BODY.	PICAS.	POINTS.		
Semi-Nonp.	0	5	Minion	..	0	12	Paragon	..	1	12
Brilliant	..	0	Brevier	..	0	13	Double Pica	..	1	16
Gem	..	0	Bourgeois	..	0	14	2-line Pica	..	2	0
Diamond	..	0	Long Primer	0	16	2-line English	2	4		
Pl.-Diamond	0	7½	Small Pica	..	0	18	Dbl. Primer	2	8	
Pearl	..	0	Pica	..	1	0	Dbl. G. Primer	2	16	
Ruby	..	0	English	..	1	2	3-line Pica	..	3	0
Nonpareil	..	0	Primer	..	1	4	4-line Pica	..	4	0
Emerald	..	0	Great Primer	1	8					

On this system any body with Pica spaces and quadrats, or with leads cast to the Pica body, will work with any other body in table work without justification, and with most of them the relations are of a very simple character. Pica quads may be used in any emergency for the blanks and margins of any body without justification, using leads only. To take an illustration.—

4 Picas equal 4 Small Picas and 8 points, which may be made by 8 brass space rules, or 4 $\frac{1}{2}$ leads, or 2 $\frac{1}{2}$ leads.

4 Picas equal 5 Long Primers without leads.

4 Picas equal 6 Breviers and 2 points, which may be either $\frac{2}{3}$ brass space rules or $\frac{1}{3}$ leads.

4 Picas equal 8 Nonpareils without leads.

4 Picas equal 10 Pearls without leads.

4 Picas equal 10 Diamonds and 8 Points, which may be either a $\frac{1}{2}$ lead, or 2 $\frac{1}{4}$ leads, or 4 $\frac{1}{8}$ leads, or 10 $\frac{1}{10}$ brass space lines.

It may be shown that the same simple relation is true of any number of lines with any other body. The following is the proportionate scale for Leads, Brass Rules, &c.:—

10-to-Pica	..	0 Picas, 2 Points or 20th parts of a Pica.
8-to-Pica	..	" 2½ "
6-to-Pica	..	" 3½ "
5-to-Pica	..	" 4 "
4-to-Pica	..	" 5 "
2-to-Pica	..	" 10 "
1-to-Pica	..	" 1 Pica 0 "

Schedule.—A blank table for the purpose of entering inventories, &c., in. For a specimen of a small schedule, See STATIONERS' HALL (REGISTRATION AT).

Scopers.—Instruments used by engravers to clear away the larger portions of the wood not drawn on. They are employed in very rough work.

Scratched Figures.—Figures used in arithmetical matter when the divided and dividing figures require to be crossed over in an operation; or in law work, &c., when a *fac-simile* of a document is desired, to represent cancelled figures in the original.

Script.—An exceedingly neat style of fancy type, something like ordinary Italian handwriting; it is used chiefly for circulars. The following is a specimen:—

This neat Specimen of Script

Secretary.—A style of fancy type. It is modified from Script and Commercial.

Section (§).—A mark of reference. It stands fourth in order, and immediately after the double dagger. Sometimes it is used to mark the division of a chapter into parts or sections, whence its name.

Semicolon (;).—A symbol used in punctuation to indicate that the two affirmations between which it is placed are not immediately connected by a conjunction, or that the latter does not directly flow from or depend upon the former affirmation, although there is a more remote connection or dependence between them. Specimens of its use will be found under the head of PUNCTUATION.

Semi-Nonpareil.—Half a Nonpareil, or the thickness of a 4-to-Pica lead. Music type and split fractions only are cast to this body.

Sent to Coventry.—When a compositor or pressman acts unfairly, or refuses to comply with the recognised rules of the chapel, he is sent to Coventry, *i.e.*, every member of the chapel treats him with scorn, and will not speak to him unless matters relating to business compel them.

Seriff.—The light strokes across the top and bottom of letters. It is sometimes spelt, Seriph, Scryph, and Ceriph.

Set Close.—When matter is required to be got into a given space smaller than usual, the compositor is told to set close.

Set-off.—Sheets which, by reason of the ink on them not being dry, soil other sheets with which they come in contact are said to "set-off." Tympan sheets which have been used for long or very black jobs, usually set off, so another sheet is placed over them called the "Set-off Sheet," which can be renewed when required.

Sets Clean.—A compositor who makes few errors in his work is said to set clean; and when the reverse is the case, to set dirty.—See COMPOSING.

Setting.—See COMPOSING.

Setting Rule.—A piece of rule, cut to the measure of the page, with a projecting ear at the top right-hand corner. It is used during the composition of a line, to facilitate the adjustment of the types, and when the line is finished, it is lifted out by means of the projecting ear, and placed in front of the line just set; another line is then proceeded with.—See COMPOSING.

Setting Stick.—See COMPOSING STICK.

Setting Tapes.—To set the tapes on a cylinder printing machine, pass the tape round and close to the cylinder. Lap it over one of the tape pulleys, and then pass it around the small guide pulley on the shaft above. To increase its tightness, throw up the guide pulley from the shaft, and set the binding screw more tightly. All these pulleys are moveable on their shafts, and the distance between them may be altered at pleasure. Let the tapes rest upon the outer margin of the sheet, and see that the overlays on the tympan over which the tapes pass are of equal thickness; if not of equal thickness, the sheet will wrinkle.

Setting the Fly.—The manner of setting the fly on a printing machine is as follows: Run through a sheet of the paper to be printed, and let it run down the fly so that it is barely held by the fly pulleys. Then set the cam that works the fly, so that its point just clears the small friction roller on the shaft, and it will throw down the sheet correctly. Tighten the

spring according to the size of the sheet, and set the spring crank so that it will prevent the fly from striking too hard on the table.

Setting up a Press.—The art of erecting a press out of the various pieces in which it is constructed for the convenience of being removed. The following directions will be useful, especially to provincial and colonial printers. The Columbian press is put up as follows: When you have the staple on the spot where you intend it to stand, put the feet on their respective places as marked, and raise it upon them; then put the bar-handle in with the bolt as marked; then put the principle lever into its place, and put the bolt in which connects it to the staple; then put the angular or crooked part, which has three round holes and one square hole, through it into the mortice, which is in the projecting part of the long side of the staple, and put in the bolt that attaches it to the staple. In the extremity of the edges of the heads of those two before-mentioned bolts you will observe marks, and corresponding marks over the holes through which they pass; put the bolts in so as the said marks meet together and correspond, and so on until you have all the remaining parts in their respective places. Put on the ribs, and having made them perfectly straight, screw them tight to the staple. This done, lift the press-table into its place, and attach it to the rounce with the girths; the press being now ready for the platen, put the four screws which have heads on one side, intended to attach the platen to the piston, and screw on the nut belonging to each. The press-table being properly adjusted with a spirit level, fix a bearer at each corner and one in the centre, and lift the platen on them. The platen being fixed straight, raise the screws in the piston, and roll in the platen as it is fixed on the bearers on the table, until it is exactly under the piston, when the screws, already in the piston, are fixed with their heads from you, into their proper places in the platen, and secured by the four small blocks of iron which accompany them. After putting the necessary number of tin or iron plates under the piston, bring the bar-handle over till the piston and platen come in contact, and hold it there till each nut is screwed tight with the hand. This done, give each nut one turn or so with a screw-key. It being these plates of tin or sheet-iron which increases the impression, care in ascertaining the proper number required will obviate the necessity and save the trouble of either adding to or decreasing the number after the platen is screwed up and adjusted. In adjusting the platen, make a gauge that will exactly come between and touch the platen and the table, with the bar-handle at rest. With this gauge, which may be made of two four-line quotations, and justified to the proper height with paper, card, or leads, try whether the platen is exactly parallel with the table, by rolling it in and inserting the gauge under each corner of the platen. If any part of it be thus found lower than the rest, it must be raised, by turning a little the platen screw next the part to be raised. Again try the gauge, and if not yet exactly true, again screw the nut a little next the part affected: half or quarter of a turn will make a great difference. By thus gauging and tightening the nuts, the platen may be adjusted to a mathematical nicety. It is necessary always to keep the proper side of the connecting rod up, when you have occasion to take the bolt out of the elbow of the bar, either to increase or diminish the power; increasing the power is effected by turning the rod so as to shorten it, and decreasing it by turning it the contrary way. By the nut on the iron screw, which connects the main and top counterpoise levers, you are to regulate the ascent and descent of the platen, so as to clear the head-bands of the tympan, which is done by screwing the iron nut up as far as is necessary. The small holes which communicate with the respective bolts require a small portion of pure sweet oil occasionally, and the use of the purest Florence flask oil is recommended as the cheapest in the end, which has been experimentally proved. You may easily judge whether every thing is put in its proper place, by the perfect ease with which the bar-handle moves when put up. In your commencement of working, let your impression be rather light, and increase it by the before-mentioned means, until you have obtained such an impression as is desired. The pressmen should take all the cylindrical bolts out of their

respective places once a week, taking out one at a time, cleaning and oiling it, and putting it into its place again. The manner of setting up an Imperial press is somewhat different: First, put on the legs to their corresponding marks on the staple. After you have placed the ribs to their marks, and before you have made them fast, see that the table runs true between the cheeks of the staple; then screw them fast. Hang the platen by its screws to the piston; observing, by the marks, that the screws and cotters are each in their proper holes. The attachment and adjustment of the platen are the same as in the case of the Columbian press. The bar-handle, the rounce, the rib stay, &c., as they can only be put in their respective places, need no directions. The small round bar of iron sent with the press is called the oiling-bar. When the press requires oiling, bring the bar-handle home to the cheek, then place the oiling bar between the head of the press and the flange of the piston; which, taking off the power of the springs, sets the working parts of the press at liberty; you can then with ease take out the main bolt, chill, &c., and after oiling the bearings, replace them in the same manner as before (the parts marked "front" must be kept to the front of the press), and removing the bar, the press is again in working order. The screw in front of the piston is connected with a wedge, by which you may with perfect ease at all times regulate the pull to your work; observing that the pull is correct when the screw is about half way out. If the impression is then too light, place between the two wedges at the back of the piston a strip or two of tin, or as many as will give you the power required. After the platen is by this means once properly adjusted, it will not at any time need (as some presses do) to be unscrewed, iron or cards to be introduced between the piston and the platen, and a re-adjusting of the platen. The wedge will then act properly, and by screwing it in or out, the impression will be light or heavy, as the work requires; taking care, whenever you use the screw, to fix the oiling-bar as directed to be done when oiling the press. The press is always working to its full power when you bring the bar-handle home to the cheek of the staple; and, whether the work requires a light or heavy impression, should always be so worked. The same observations respecting oiling and keeping the Columbian press clean, are applicable to the Imperial press.

Setting-up Stick.—A long narrow piece of wood, with sides somewhat similar to a slip galley, used by boys in type-foundries to set-up types ready for the dresser.

Set Wide.—In printing, matter with wide spacing between the words. In typefounding, when the face of the letter is set on the body so as to give it the appearance, when printed in a line with other letters, of having a space on each side.

Shank.—The square body upon which the face of a letter stands.

Shears.—A large and exceedingly strong pair of scissors, used for cutting brass rules, leads, &c.

Sheet.—Any piece of paper may be called a sheet; but for the purposes of the printer, paper is cut up into certain sizes, distinguished by separate names. See DIMENSIONS OF PAPER. To form leaves, sheets are folded up into sections, which also have their proper names, thus: *Folio* denotes a sheet of paper folded into two leaves, making four pages; *quarto*, or, as abbreviated, 4to is a sheet divided into four leaves, or eight pages; *octavo*, 8vo, a sheet into eight leaves, or sixteen pages; *duodecimo*, 12mo, a sheet into twelve leaves, or twenty-four pages. So, also, sixteens, 16mo; eighteens, 18mo; twenty-four, 24mo; thirty-twos, 32mo; forty-eights, 48mo; sixty-fours, 64mo, are the several designations of sheets when folded into sixteen, eighteen, twenty-four, thirty-two, forty-eight, and sixty-four leaves; making each twice the number of pages. In presswork, a sheet consists of two formes backing each other. Compositors, in casting-up their matter, charge at so much per sheet.

Sheet the Roller.—After a pressman has scraped the ink off his roller, he lays a sheet of paper on the ink table and passes the roller several times across it, in order to remove all the superfluous ink off it previously to distributing it on the table.

Seventy-twos.—A sheet folded into thirty-six leaves, making seventy-two pages.

Shades of Ink.—See DRY COLOURS.

Sleep's Foot.—An iron hammer with a claw end, used by pressmen.

Sherwin and Cope's Press.—This press, otherwise called the Imperial Press, has been greatly modified and improved since its invention, but at the time of its introduction it was a vast improvement upon the press of Earl Stanhope. The works are almost entirely concealed within the head of the press, and are extremely few and simple, being the same as those of the Albion Press (*q.v.*).

Shoe.—An old slipper, with the back part of the "upper" cut away; it is nailed through the heel, and hung at the end of the frame, so that the compositor, when he comes across a battered or broken letter, may put it in there. When the shoe becomes full it is emptied into a large box, called the "batter-box," in which the old metal is kept till returned to the founder to be remelted and made into new type.

Shooting Stick.—A wedge-shaped instrument, used for driving up the quoins in locking-up (*q.v.*). It is usually made of hard wood, metal, or horn.

Short Accent.—See ACCENTS.

Short Cross.—See CROSS.

Short Letters.—Letters which have the face cast on the middle or shank of the body, as *a c e m n o r s u v w x z*, all of which have beads above and below the face, both in Roman and Italic.

Short Pages.—Pages which are not of the same length as those which they back or face, such as the ending of a chapter or volume.

Shoulder of a Letter.—So called by typefounders, is that part of a letter which is commonly termed by printers the "beard."

Showbills.—Otherwise called placards, from a French word, are defined as public papers posted in a public place. They constitute a large and important branch of the jobbing work of a printing office, and by the variety of designs, sizes, and colours that may be effected in them present a wide and most interesting field for the exercise of the tact, taste, and skill of the compositor. There is far more of art in setting-up a showbill than many persons imagine, and art of a kind that is not less derived from constant practice, observation, and study, but due to natural aptitude and ingenuity. While cards and circulars are generally composed according to certain settled modes, according to the class of work to which they belong, placards vary in almost every single instance. Great attention has been paid to this description of work in England during the last few years, and vast improvement has taken place in the manner of its execution, as a glance at any well-posted hoarding will show. Formerly a dense dullness and a melancholy kind of monotony pervaded all of these products of our English press. An ordinary black letter on a white or blue or orange ground was thought quite sufficient to attract the public attention. It was quite an exhibition of enterprise to print in two, and more conspicuously so, in three colours, and even these were the ordinary red and blue inks. An advance in the public taste and a vast extension of the advertising system in time demanded something more artistic and more striking, and printers were compelled to take into consideration the demands of their customers. They have been enabled to meet those demands by several advantages comparatively recently brought within their reach. The price of ink has been much reduced, and workmen have commenced to learn the system of blending and contrasting colours to the best advantage. Wood engraving has been brought more into use, not only for pictorial ornaments, but in the rougher way of introducing more tasteful letters with greater variety of form. The size, too, of placards has been increased of late years, for where a mere double-demy, or even double-crown bill would suffice, a four or six-sheet bill is now considered necessary. In

no branch of printing, in fact, has more progress been made within the last generation than in this. Extensive establishments are now found all over the country—notably in Birmingham, Glasgow, London, Nottingham, and Carlisle—for the chief purpose of doing this kind of work, and the beauty and cheapness of their productions are marvellous. America and France have till within lately completely surpassed England in this respect, but many of the placards now to be seen in London and the large towns could hardly be excelled in any part of the world. In designing a placard it ought first of all to be remembered that the object of the bill is to catch the public eye. Hence the *attractiveness* of a placard is its chief recommendation, and the measure of its value. This attractiveness may be secured either by the excellence of the printing or the originality of the design. It is true that mere size will catch the attention of the passer by; but to print a bill of inordinate dimensions with this sole object is very inartistic, and indicates a want of ingenuity and skill on the part of its designer. The smaller the bill in proportion to its showiness the better, both for the sake of appearance and of economy. For some sorts of showbills, indeed, even *singularity* may be aimed at, but whether this should be attempted or avoided depends upon the nature of the particular work in hand. It may be laid down as a general rule, that the fewer words in a bill the more effective it is likely to be. An expert at placard composition displays his ability by the accomplishment of his design with the use of the least amount of explanation. The reason of this is obvious. The fewer the words on a sheet of paper the larger may be the characters in which they are set; and, besides, an undue quantity of small type on a posted bill rather repels than excites public attention. It should be left to the advertisement, the prospectus, the circular, to explain and to demonstrate; the province of the placard is to indicate, and assert. The wording of the latter should be terse, incisive; not liable to misunderstanding, not apt to be forgotten. A newspaper paragraph might commence, "Theatre Royal, Buckintown. During the past week this theatre has been, we are exceedingly glad to learn, completely filled in every part of the house." But in a placard the same fact should be announced in the two words, "Crowded Houses!" And while it is permissible to say in the former that "the actor who will sustain the part of *An English Gentleman* will be Mr. Sothern, but he will not repeat it during the present engagement;" the latter will simply state, "*An English Gentleman*, Mr. Sothern, for this night only." Simple as this rule may appear, it is constantly broken, to the detriment of the general effect of the bill, and the wasteful increase of expense in printing it. In writing out a bill, anyone who strives after perfection will frequently lament the proportion in the English language of particles—of conjunctions, prepositions, &c., and even grumble at having to use so many adverbs and adjectives, valuable as is their assistance. Verbs, nouns, and pronouns, unfortunately, cannot compose every sentence without becoming dull and wearisome. So that auxiliary words have to be used; but they should be used as sparingly as possible. The bill having been written out, is placed in the hands of the printer, some hints being given to him of its general intention and the comparative prominence to be given to the different displayed lines respectively. He should then underline the chief or primary lines, and it is advisable to make a kind of mental scale of the letters, and mark at the end of the words *a* if they are to be largest, *b* next smaller, *c*, and so on. Having marked all the primary lines, regard the rest merely as secondary or subordinate lines—catch lines, in the phraseology of the trade. These accessory lines should be as few as possible, and as small as is convenient—regard being had to legibility. The more space devoted to the chief lines the better. Some printers set the small lines first, and then give all the remaining room to the big ones. This is a sort of rough-and-ready way, but one which seldom produces a good bill, as it rather reverses the order of things. The largest lines should be got up first, then those of a size smaller, and so on, diminishing to the smallest catch line. By this means only can a really good bill be arranged. Placards, indeed, should be intelligible when only their chief lines are read, and the small lines passed over. By this means a double effect is gained, for the passer by on the opposite side of the street, who can from

his distance only read the primary lines, and the passer by who is only a yard off and can read the whole, are equally suited. But when read in this way the exact information which is intended ought to be distinctly conveyed, for it is possible by bringing secondary words into great prominence to give the bill a totally opposite appearance to what it really is—a plan sometimes adopted to excite public curiosity—as what appears by the chief lines to be a royal proclamation may be in reality a chimney sweep's notice, according to the lines that are "thrown up." A certain balance must be preserved; over-display should be avoided, and all elusiveness guarded against. As far as possible, the chief effects should be made about the middle of the bill, just as in a work of art the chief figures are got into the middle. We read of artists who have attained the highest eminence incessantly taking notes of every minute effect that they discovered in the works of the great masters, and jealously hoarding them up till they could be brought into use. So ought the aspiring printer to observe and record for his future advantage any original idea, any ingenious or beautiful combination, so that his mind may be stored with expedients for attaining all kinds of effects. A dead wall decorated by the bill-poster affords more subjects for study than one person in a thousand ever imagines.

Shuffling.—A term used in warehouse work.—*See* KNOCK-UP.

Side-Heads.—Words that stand in the opening lines of chapters, sections, and paragraphs for the purpose of indicating their contents.

Side Notes.—Notes placed in the outer margin of a page, as in law work, appeal cases, Parliamentary Bills, &c.

Sidestick.—Furniture which is thicker at one end than the other, placed at the outside of the matter, between which and the chase the quoins are wedged up to tighten the forme. Sidesticks are frequently made of iron, especially for newspapers and magazines requiring very tight locking-up.—*See* FOOTSTICK.

Signatures.—The letters of the alphabet used by English printers in the foot margin of certain pages as a guide to direct the bookbinder in arranging and folding the sheets. The letter B is put at the bottom of the first sheet or half sheet which comes immediately after the title-page, preface, and contents; C, at that of the second; and so on throughout the alphabet, with the exception of J, V, and W. If the number of pages requires more signatures than the alphabet will indicate, the letters are doubled or trebled, or a numeral is prefixed to them; as, A A, B B; 2 A, 2 B; 3 A, &c. Figures, or numeral characters (1, 1*, 2, 2*, &c.), being thought more convenient than letters, are used for the same purpose in America. But in catalogues, and other publications in which figures often occur, capitals or small capitals are, for the sake of distinction, preferable. The reason that J, V, and W are not used as signatures is, that at the invention of printing there were no such letters in the alphabet. E expressed both I and J; U both U and V; and UU the double letter W.

Signs.—Types cast to represent certain quantities, processes, objects, &c., which it would not be convenient to describe in words. A large number of signs are in use in the present day, and new ones are frequently introduced.—*See* ALGEBRAIC, MATHEMATICAL, &c., SIGNS.

Sixteens.—A sheet of paper folded into eight leaves, forming sixteen pages. It is written 16mo.

Sixty-fours.—A sheet folded into thirty-two leaves, making sixty-four pages.

Skalgography.—The name given to a new etching process for producing blocks for letter-press printing, which was invented by Mr. I. C. Nielsen, of 93, Chancery-lane. It has been made available for the illustration of several periodicals. A polished zinc plate is coated with a thin white preparation, through which the drawing is executed with a horn or bone point. The zinc, thus discovered, will show the draughtsman the full effect of his work, and he works with the same facility on the plate as on a sheet of paper. The plate is then covered over with a varnish which adheres to all the drawn lines, but can be removed

where the preparation is below. The plate is now ready for etching, which the inventor does by a system of his own. It is claimed that the process of Skalgography has many advantages, one of which at least the artist will appreciate, namely, that his drawing is produced with the utmost fidelity. Six to twenty-four hours' treatment, according to the dimensions of the plate, fits the drawing for the press. This process is said to be fit for illustrations of every description, as well as key-blocks for colour-printing, having three advantages: strict *fac-simile*, quickness and cheapness, without the disadvantages so generally shown by other similar inventions, namely, rottenness and unevenness in line. Cheapness, combined with rapidity and good work, seems, as far as illustrations are concerned, to have been the object of the inventor of Skalgography.

Slice Galley.—A galley constructed with a thin false bottom, in order that matter may be more conveniently transferred to the stone (*q.v.*).

Slip Galley.—*See* GALLEYS.

Slug.—An American name for what we call clumps (*q.v.*).

Small Caps.—Capital letters of a small size, used for the purpose of giving greater emphasis to a word than can be conveyed by Italic; and for displaying lines, the running heads of pages, heads of chapters, side-heads, &c. In manuscript, small capitals are indicated by two lines drawn under the words. In general they are cut to Roman founts only, but sometimes to Italic founts. The letters c o s v w x z are so like lower-case letters that care must be taken that they are not used with them. Typefounders should give these letters a *nick* on the back.

Smothering a Roller.—*See* INKING-UP.

Solid Matter.—Matter which contains no leads, and but few breaks or whites; the reverse of Leaded Matter, or Fat matter (*q.v.*).

Solid Pick.—A letter in a stereotype plate filled up with metal, resulting from an imperfect mould.

Sorts.—The letters in the different boxes in the case.—*See* RUNS ON SORTS; OUT OF SORTS.

Space Out.—To space matter to any requisite dimension.—*See* COMPOSING.

Space Lines.—*See* BRASS SPACE LINES.

Space Rules.—Metal rules, cast to the thickness of a four-to-Pica lead, and used in close tabular matter, to save the trouble and inconvenience of cutting small pieces of brass rule to two, three, and four em measures.

Spaces.—Pieces of metal, less in height than letters, cast to the various bodies of types to form the whites or spaces between words and at the ends of lines for justification. They are cast to various thicknesses, and are called by various names. Those which run five to the em are called thin spaces; four to an em, middle spaces; three to an em, thick spaces; two to an em, en quadrats. The hair spaces average eight to the em, but range between seven and ten, according to the size of the body.—*See* JUSTIFYING, HAIR SPACES, THIN SPACES, &c.

Spacing.—The art of placing the proper spaces between words, &c., with a view to securing the best and most symmetrical appearance.—*See* COMPOSING.

Spring Rule.—*See* BRASS RULE.

Squabble.—Lines of matter twisted out of their proper positions, with letters running into wrong lines, &c.

Square Cross (⊠).—Otherwise, Maltese cross.

***Stab.**—An abbreviation of establishment. A man who is "on stab" receives establishment wages, *i.e.*, regular fixed weekly wages, irrespective of the nature or amount of his work, and is, therefore, in exactly an opposite position to one who is "on piece," who is paid only by the job and according to what he performs.

Stand.—Otherwise frame (*q.v.*).

Standing Matter.—Matter which is reserved from one

edition of a work to be used partly or wholly in another. Many advertisements, for instance, ordered for a certain number of insertions in a periodical or newspaper, are not distributed, but are used over and over again, till the order is exhausted, and are called "Standing Advertisements."

Standing Press.—A screw press used for removing the impression or indentation on the paper after it has been printed, and restoring it to a perfectly smooth surface. The sheets are placed between glazed boards, and the pressure obtained by means of applying a lever to the screw.

Stanhope Press.—A description of iron press invented by the late Earl Stanhope about 1800. It is not much in use at the present day, having been superseded by the Albion and Columbian presses. A description and engravings of the Stanhope press will be found in Johnson's "Typographia," Vol. II., p. 536; Savage's "Dictionary," p. 779; and Stower's "Printers' Grammar," p. 493.

Star.—See **ASTERISK**.

Stationers' Hall (Registration at).—The Copyright Amendment Act (5 & 6 Vic., cap. 45) enacts that, to secure copyright in literary productions, the proprietor shall make entry "in the Registry Book of the Stationers' Company, of the Title of such Book, the Time of the first Publication thereof, the Name and Place of abode of the Publisher thereof, and the Name and Place of abode of the Proprietor of the Copyright of the said Book, or of any portion of such Copyright, in the Form in that Behalf given in the Schedule to this Act annexed, upon Payment of the Sum of Five Shillings to the Officer of the said Company; and that it shall be lawful for every such registered Proprietor to assign his Interest, or any Portion of his Interest therein, by making Entry in the said Book of Registry of such Assignment, and of the Name and Place of Abode of the Assignee thereof, in the Form given in that Behalf in the said Schedule, on Payment of the like Sum; and such Assignment so entered shall be effectual in Law to all Intents and Purposes whatsoever, without being subject to any Stamp or Duty, and shall be of the same Force and Effect as if such Assignment had been made by Deed." The following is the form of requiring entry of proprietorship.

I *A.B.* of do hereby certify, That I am the Proprietor of the Copyright of a Book, intitled *V.Z.*, and I hereby require you to make Entry in the Register Book of the Stationers' Company of my Proprietorship of such Copyright according to the Particulars underwritten.

Title of Book.	Name of Publisher and Place of Publication	Name and Place of Abode of the Proprietor of the Copyright.	Date of First Publication.
<i>V.Z.</i>		<i>A.B.</i>	

Dated this Day of 18 A.B.
Witness, *C.D.* (Signed)

Stem.—The straight flat strokes of a straight letter.

Stereo.—The usual abbreviation for Stereotype.

Stereotype.—Types cast in one piece, forming plates, about one-eighth of an inch in thickness.

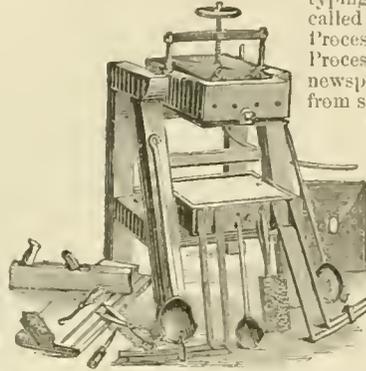
Stereotype Printing.—Printing from metal plates instead of separate letters.—See **STEREOTYPING**.

Stereotyper.—A man who manufactures stereotype plates.

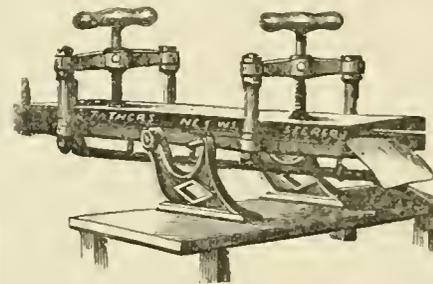
Stereo Blocks.—Metal blocks upon which stereotype plates are mounted, in order to be printed from. They are cast in various sizes, the largest being 17 ems by 8 ems; the smaller

sizes are fractional parts of the large block, so as to enable the workman to make them up to suit the dimensions of certain plates. The plates are fastened to the blocks by means of brass catches.—See **MOUNTING BLOCKS**.

Stereotyping.—The art of taking casts or stereotype plates from types, woodcuts, &c. The two principal methods of stereotyping, as now practised, are called respectively the "Plaster Process" and the "Papier Maché Process." Most of the principal newspapers are now printed from stereotype plates. For an account of the invention, see "Johnson's Typographia," Vol. II., p. 657; "Abridgement of Specifications Relating to Printing," Vol. I., pp. 93-95. The annexed engraving is a view of an exceedingly economical and useful stereotyping apparatus manufactured by Mr. Temple, of Hull. This machine is adapted



for plates of small jobs and pages of books; for newspaper columns a different shaped apparatus is required, such as that illustrated below, which is supplied by Mr. Tather, of Hull, and is highly recommended to newspaper proprietors. Matter for stereotyping should be set with stereotype spaces and quadrats



(which are much higher than those used in ordinary founts), and the formes should be small, with type-high clumps at top and bottom, for protecting the ends of the plates from injury while they are passing through the machine during the shaving process.

The formes should be locked up tight and square, evenly planed down, and free from all dirt or ink on the face.

Stet.—A word written in copy or in a proof to show that some matter erroneously cancelled must remain; the literal meaning is, *let it stand*.

Stone.—See **IMPOSING SURFACE**.

Stoneman.—A compositor who assists the printer of a newspaper in imposition, correcting editors' proofs, &c.

Storekeeper.—A compositor who has to look after the various founts of type, furniture, leads, &c. His duty is to keep an account of all the material in stock, and when a new work is given out to supply the companionship with the necessary appliances for executing it. In like manner, when a work is finished, and the companionship have cleared it away, the type, furniture, chases, leads, &c., are brought to him to be stored away ready for any emergency. The office of Storekeeper is frequently combined with that of Quoin-drawer Overseer (*q.r.*).

Sub-head.—When an article or chapter is divided into several parts, the headings to those parts are set in smaller type than the full head, and are called Sub-heads.

Superior Letters.—Letters cast unusually high on the shank so that a large beard is left below.—See **INFERIOR LETTERS**.

Super Royal.—A size of paper.—See **DIMENSIONS OF PAPER**.

Syllabication.—The art of dividing words into syllables.—See **DIVISION OF WORDS**.

Syllabo.—A letter or combination of letters uttered by one impulse of the voice.

Symbols.—See SIGNS.

T.

Table of a Press.—The flat surface on which the type lays, otherwise called the bed (*q.v.*).

Table Work.—Matter set up in four or more columns depending on each other, and reading across the page. Compositors are paid double the price of common matter for tables of four columns with headings, or five or more columns without headings.

Tabular Matter.—Matter set up in three or four columns depending on each other, and reading across the page. The price paid for this class of work—according to the London Compositors' Scale—is, three columns, without headings, one-fourth extra; three columns with headings, or four columns without, one-half extra.

Tail Piece.—An ornamental device placed at the end of a chapter, or at the end of a book, immediately over the imprint. Great taste was displayed by the ancient printers in the selection and execution of these ornaments, which are again in fashion since the revival of the "old style" of type.

Take.—A portion of copy given out at one time, whether large or small.—See COMPANIONSHIP.

Taker-off.—The person who takes the sheets out of a machine after they have been printed. This work is usually performed by young persons; but the invention of Flyers (*q.v.*) is gradually superseding this kind of labour.

Take up.—When a compositor is unable, through press of business, illness, or otherwise, to finish his copy in time for the making-up, and the job is urgent, another compositor is requested to "take up" that portion of the copy left unset.

Taking Copy.—The act of receiving a "take" of copy from the clicker or overseer, after distribution.

Taking-off at Press.—Removing the sheet from the tympan and placing it on the heap. This is nearly always done by the pressman, but before the introduction of machines, when expedition was required, it became the duty of another person who was called the "fly" (*q.v.*)

Tapes.—The bands on which the sheets are conveyed through a certain class of machines, which are so distinguished from gripper machines, in which the sheets are held by grippers or claws.—See GRIPPER MACHINES.

Text.—The text is the chief body of a work; the type is uniform throughout the text, although the notes, extracts, &c., may be set in smaller letter.

Text Letter.—A style of type somewhat similar to "Black" letter: it is sometimes called German Text.

Thick Spaces.—Spaces, three of which go to the em. They are the most used of all spaces, and are generally placed between the words on the first setting of a line previously to spacing it out to the measure.

Thin Spaces.—Spaces, five of which go to the em.

Thirty-sixes.—A sheet of paper folded into thirty-six leaves, making seventy-two pages.

Thirty-twos.—A sheet of paper folded into thirty-two leaves, making sixty-four pages.

Throwing with Quads.—See JEFFING.

Thumb-piece.—See EAR OF THE FRISKET.

Tightening the Quoins.—This is a far more important part of a compositor's work than many imagine. A compositor, in quoining up a forme, usually places any sort of quoin that apparently fits, and when he comes to lock up the forme he is necessitated to change many of them; whereas the proper way is to push up the quoins as tightly as possible with the thumb, so much so that the forme can be partially raised, before locking

up, to see if the matter is properly justified. Some compositors have a habit of pushing up the quoins this way so tight that they cannot loosen them again without the aid of the mallet and shooting-stick. Before finally locking up, the quoins should be gently tightened by tapping them up with the mallet and shooting-stick, and any loose ones replaced.

Tilde (~).—A mark used in some Spanish words, as España. It adds the sound of *è* to the letter over which it stands.

Tinted Inks.—See DRY COLOURS.

Title Page.—The page containing the title; sometimes called the full title, to distinguish it from the bastard title, which is a condensation of the title, and printed on the preceding leaf.

Title Sheet.—The sheet which contains the title page, dedications, preface, or other preliminary matter.

Token.—A perfect half ream of paper, or two hundred and fifty-eight sheets. Paper is given out to be wetted, and pressmen's bills are made up by, the token.

Token Sheet.—When paper is wet in quantity, the last sheet of each token is allowed to project slightly at one corner, so as to mark the division of the pile into tokens.

Transparent Ink.—A description of ink which is used to imitate the waterlines of paper, and for various other useful and ornamental purposes. It is manufactured for Mr. Jos. M. Powell, 3, Bonverie-street, London, E.C.

Transposing.—Changing the place of letter, either in lines, paragraphs, or pages, that has got into a wrong position. In correcting a proof, if a letter is transposed, as *teh*, the Reader draws a small horizontal line under the letter, and in the margin opposite writes, *trs.* (ital rom).

Treadle Machines.—Machines in which the motive power is supplied by the action of the foot on a treadle. Small jobbing machines are usually supplied with an arrangement of this kind. An engraving of a treadle machine illustrates the article DEGENER'S PRESS.

Tumbling Cylinder.—The impression cylinder of a printing machine, commonly known as a "Tumbler." The peculiarity of this cylinder is, that instead of continuously revolving, it returns to its original position after each impression.

Turned Letter.—A letter which is turned upside down; that is, the nick is at the top instead of the foot. The mark used by press correctors to show the error is—

Turn for a Letter.—When a letter of any sort is short, the direction is sometimes given to "turn" for it; that is, to insert any letter of an equal size, but with the feet uppermost—the black mark resulting in the proof not being liable to be overlooked. To avoid the friction of the face on the imposing surface, some printers merely use a turned letter (*q.v.*).

Turning a Heap.—Reversing the position of the pile of sheets before working the reiteration, so that the white side is uppermost.

Turn-over.—An apprentice who has not completed his full time of service with one master, and is transferred to another to finish his apprenticeship. The proper and lawful manner of turning over an apprentice is accompanied by a transfer of the indentures also, which are attested by the new master, and become as binding as when originally signed; but of late years an injurious system has prevailed of accepting boys without asking any questions as to whether they have been apprenticed or not, and placing them "at case" on half their earnings. These boys are taken on and discharged according to the fluctuating nature of the business, just the same as casual journeymen. They are principally engaged on cheap newspapers and periodicals, where little care is taken whether their orthography is good or the spacing regular. The evil result of this practice is, that the trade is inundated by a large number of incompetent workmen.

Turns Over.—When an article exceeds a column, page, &c., it is said to "turn over" the column, page, and so on.

Turpentine.—Spirits of turpentine are used in the printing-office for cleaning ink off rollers, inking tables, &c. No other solvent should be used for cleaning woodcuts.

Turps.—A colloquial abbreviation of turpentine.

Twelves.—A sheet of paper folded into twelve leaves, making twenty-four pages.

Twenties.—A sheet of paper folded into twenty leaves, making forty pages.

Twenty-fours.—A sheet of paper folded into twenty-four leaves, making forty-eight pages.

Two-Colour Machines.—Machines which print in two colours—red and black, for instance—at one operation. They were introduced by Mr. G. Duncan, of Liverpool.—See DUNCAN'S MACHINES.

Two-Feeder Machines.—Machines into which the paper is fed at two places, thereby producing twice as many impressions in a given time as a single-feeder machine.

Two-line.—Types double in depth of any body are called two-line of that body. Thus two-line Pica is equal in depth to two Picas one above the other.

Two-line Letter.—Letter the face of which fully charges the body of the type. For instance, Great Primer Roman is two lines of Bourgeois in body, but the face of the type is not so, a "beard" being left for the ascending and descending letters of the lower-case: on the other hand, Titling Caps, cast to the full depth of a Great Primer body, are called Two-line Bourgeois.

Tying-up Pages.—Securing them with string preparatory to their being laid in order on the imposing surface.—See PAGE (TYING-UP A).

Tympan.—A frame over which is stretched parchment, cloth, or paper, on which the sheet to be printed is placed before being turned down upon the forme. An inner tympan fits into it, and between the two the blankets and paper are placed which act as a sort of pad between the platen of the press and the forme when the table is run in.

Tympan Hooks.—The hooks on the sides of the inner tympan frame, which attach it to the outer.

Tympan Sheet.—A sheet of paper pasted upon the tympan, at the bottom and off-side of which pins are inserted, as a guide to the pressman in laying the sheet, also for affixing overlays upon.

Type Scale.—A rule or measure, made of ivory or wood upon which is marked the depths, in ems, of the various sizes of type, somewhat similar to the inches and fractional parts of inches on a foot-rule used by Carpenters, &c. A type scale is very handy for casting-off matter: for ascertaining the length and breadth of a page; or for determining what size of type a reprint is composed of.

Type.—The stamps or dies which impress the letters on the paper in printing. Type includes not only the letters which form the words of any language, but also the punctuational symbols, spaces, quadrats, &c. A complete assortment of these is called a Fount (*q.v.*), which may be large or small, but as certain of the types are used more frequently than others there is a regular scale of the proportion of the different characters, which is called a *Bill of Type*, of which a specimen is annexed. Owing to the varying styles of authors and the diverse subjects of books, there will generally be found a number of particular sorts deficient in a fount, whatever the proportions may have been at first. A new fount of letter may run evenly on a work in general literature written in the third person, while a novel filled with dialogues in the first person will rapidly exhaust certain letters, and require sorts to render the fount serviceable to its full general capacity. So with scientific and other books. Even in the case of two authors writing on the same subject, there is no certainty that the fount will run alike. The master-printer, therefore, to keep the entire letter in use, is compelled to order sorts, and his fount is thus constantly growing larger.—See LETTERS.

The following is a bill of type (referred to in the previous paragraph), and shows the proportions for 800lbs. of Pica:—

a	.....	8500	,	.....	4500	A	.....	600	A	.....	300
b	.....	1600	;	.....	800	B	.....	400	B	.....	200
c	.....	3000	:	.....	600	C	.....	500	C	.....	250
d	.....	4400	.	.....	2000	D	.....	500	D	.....	250
e	.....	12000	-	.....	1000	E	.....	600	E	.....	300
f	.....	2500	?	.....	200	F	.....	400	F	.....	200
g	.....	1700	!	.....	150	G	.....	400	G	.....	200
h	.....	6400	'	.....	700	H	.....	400	H	.....	200
i	.....	8000	(	.....	300	I	.....	800	I	.....	400
j	.....	400	]	.....	150	J	.....	300	J	.....	150
k	.....	800	*	.....	100	K	.....	300	K	.....	150
l	.....	4000	+	.....	100	L	.....	500	L	.....	250
m	.....	3000	+	.....	100	M	.....	400	M	.....	200
n	.....	8000	\$	.....	100	N	.....	400	N	.....	200
o	.....	8000	°	.....	100	O	.....	400	O	.....	200
p	.....	1700	•	.....	60	P	.....	400	P	.....	200
q	.....	500				Q	.....	180	Q	.....	90
r	.....	6200	1	.....	1300	R	.....	400	R	.....	200
s	.....	8000	2	.....	1200	S	.....	500	S	.....	250
t	.....	9000	3	.....	1100	T	.....	650	T	.....	325
u	.....	3400	4	.....	1000	U	.....	300	U	.....	150
v	.....	1200	5	.....	1000	V	.....	300	V	.....	150
w	.....	2000	6	.....	1000	W	.....	400	W	.....	200
x	.....	400	7	.....	1000	X	.....	180	x	.....	90
y	.....	2000	8	.....	1000	Y	.....	300	y	.....	150
z	.....	200	9	.....	1000	Z	.....	80	z	.....	40
&	.....	200	0	.....	1300	Æ	.....	40	Æ	.....	20
ff	.....	400	é	.....	200	Œ	.....	30	œ	.....	15
ñ	.....	500	à	.....	200	1	.....	150	<i>Spaces.</i>		
fl	.....	200	â	.....	200	2	.....	150	Thick	...	18000
ll	.....	100	ã	.....	200	3	.....	150	Middle	...	12000
ffi	.....	150	ä	.....	200	4	.....	50	Thin	...	8000
æ	.....	100	å	.....	200	5	.....	50	Hair	...	3000
œ	.....	60				6	.....	50	Em Quds	...	2500
—	.....	150				7	.....	50	En Quds	...	5000
—	.....	90				8	.....	50	Large Quads,	...	about 80 lbs.
—	.....	60				9	.....	30			

Italic, one-tenth of Roman.

Type Founding.—The art of casting the characters on moveable types used in printing. The whole art of printing was carefully kept a mystery by the initiated until about half a century after the probable date of the invention. The early printers generally combined all the various processes of the profession in their own offices, but as the art spread over Europe, and secrecy became less and less necessary, the most enterprising speedily began to furnish their distant brethren with types from their respective foundries. For a long period it seems that type-founding, printing, and binding went under the general term of *printing*, and that printers cast the types used by them, and printed and bound the works executed in their establishments. Type-founding became a distinct calling early in the seventeenth century. The first record of the separation of the art of type-founding from the art of printing, would appear to be a decree of the Star Chamber (temp. Chas. 1.), made July 11, 1637, which ordained the following regulations concerning English founders:—

That there shall be four founders of letters for printing, and no more.

That the Archbishop of Canterbury, or the Bishop of London, with six other high commissioners, shall supply the places of those four as they shall become void.

That no master-founder shall keep above two apprentices at one time.

That all journeymen-founders be employed by the masters of the trade, and that idle journeymen be compelled to work, upon pain of imprisonment and such other punishment as the court shall think fit.

That no master-founder of letters shall employ any other person in any work belonging to the casting or founding of letters than freemen or apprentices to the trade, save only in pulling off the knots of metal hanging at the ends of the letters when they are first cast: in which work every master-founder may employ one boy only, not bound to the trade.

By a decree (28 Elizabeth), the master-printers in England were limited to twenty. The decree was revised 14 Chas. II.; renewed 16 Chas. II.; and again for seven years 1st James II., when it expired and was never renewed. The "polyglot foundry," as they have been called, were succeeded by Joseph Moxon and others. But the English were unable to compete with the superior productions of the Dutch foundry, until the advent of William Caslon, who, by the beauty and excellence of his type, surpassed his Batavian competitors, when the importation of foreign type ceased, and his founts were, in turn, exported to the Continent. As usually practised, the work of producing a type or moveable letter for printing is sub-divided among various hands. These are:—

- 1st.—The *Punch Cutter*, who "cuts" the punch; that is, engraves upon the end of a slip of soft steel a *fac-simile* of the face of the letter to be produced. This, when complete, is hardened and struck into a piece of copper to form the *mataix*, which is then handed to
- 2nd.—The *Justifier*, who files the matrix so that when placed in the mould the latter becomes adjusted in such a manner that the height, thickness, line, &c., of the resulting letter are correct.
- 3rd.—The *Caster*, who pours in the metal and casts the type in the mould. The type is then handed to
- 4th.—The *Breaker*, a boy, who breaks off the jet, or runner.
- 5th.—The *Rubber*, who smooths on a stone the sides of the type so that they lie side by side in such a way as to form solid lines.
- 6th.—The *Setter-up*, who places the rubbed type in lines upon a composing stick, so that they may be submitted to the next operator,
- 7th.—The *Dresser*, who "ploughs" or planes out the notch in the foot to remove the remains of the broken jet, and to allow the types to stand freely on their feet; and next scrapes in succession the dressed edges of the type, so that they may lie in their right position, and be true to line and body. This completes the "dressing" of the type, which is then taken from the composing sticks and set up in pages.

In by far the greater number of type foundries the third operation, that of casting, is now effected by a machine, the workman merely turning a handle to give motion to cams and levers, which open and shut the mould, inject the metal, &c., so as to produce type with great rapidity. For a long time the English master foundrymen rejected these machines as imperfect, and incompetent to produce perfect types. The objection was a sound one, for the operation of the caster is not purely mechanical. The workman not only uses his muscles, but avails himself of the sense of touch to know whether the two halves of his mould are *home*, that is, in metallic contact. If not, the mould is opened and brushed, or picked with the hook to remove the dust or adhering particle of metal which, by preventing contact, increased the aperture of the mould beyond the space defined by the justified matrix, and if used in that state made a "big body." The machines having no such sense of touch, and giving no indication of the want of contact of the two halves of the mould, made "big bodies" constantly, and hence the objection to their use. Up to the year 1853, although these machines were in full work in America, and even well known to the English foundrymen, each successive French and American patent having been bought up by the English master foundrymen, yet it is believed that not one of these machines was in actual use in this country. Even the beautiful polymatype apparatus, invented by one of the Didots, and worked for many years successfully in Paris by Marcellin Legrand, and which M. Fouché purchased and worked for some time in this country, had fallen into the hands of the master foundrymen through the agency of Mr. Reed, printer, of King-street, Covent-garden, and had been destroyed on the premises. This act of barbarism and of mistaken self-interest is recorded in the Jury Reports of the Exhibition of 1851, p. 409. In the year 1853, Mr. J. R. Johnson patented (Patent No. 1351) a machine in which the fault of casting big bodies was eliminated. By

departing entirely from the ordinary form of mould, and making the opening a fixed one, not defined or determined by the matrix, it is obvious that no enlargement from dust or particles of metal could occur. This also met the hostility of the foundrymen, and an attempt was made to suppress it under the pretence of its pirating some of the patents held by them; but Mr. Johnson modified his machine so as to avoid the one alleged point of similarity, and he persevered in its use. This machine, largely used both in this country and abroad, undoubtedly led to the employment of machines by the other foundrymen, the fault of big bodies of their machines being tolerated in face of the active opposition, and diminished cost of type resulting from their use. In the year 1862, Mr. J. R. Johnson, in association with the late Mr. J. S. Atkinson, patented a supplementary machine by which all the operations succeeding the casting, enumerated above, are performed purely automatically. Six of these machines may be seen at work on the premises of the Patent Type Founding Company, 31, Red Lion-square, Holborn, W.C., and are well worth the inspection of all interested in typography. The metal may be seen melted at one end of the combined machines by a jet of gas, and at the other a line of type emerging ready for the use of the printer, without having been touched by the workman, who watches the steam-driven machines, with crossed arms, until his composing stick is filled, when he removes it, fixes another, and withdraws the driving pin to place it behind another line of cast type. There can be no more doubt of the mathematical accuracy of type thus formed, than there is of the extraordinary economy of labour which results from its use. When the patent has expired, it is evident that this will become the mode of type manufacture of the future. It is not only on the economy of labour and accuracy of production of type that we are indebted to Mr. Johnson. In the year 1854 he patented (Patent No. 817) the alloy, or series of alloys, which is now in general use. Mr. Johnson failed to substantiate his claim to be the first and sole inventor of this compound, but that he was the original introducer of it into public use is very generally admitted. By referring to the Foundrymen's price lists, it will be seen, in that year, that only one description of type is alluded to; and a vast number of analyses of type sold about that period by an eminent firm of foundrymen, who claim to have been first in all improvements in the quality of their metal, show not more than two or three per cent. of tin was employed. But in 1856 their lists show that two kinds of type alloy are used, and an analysis of the type supplied to the *Times* newspaper in 1853, contained twenty-five per cent. of tin, which, by a strange coincidence, is exactly the proportions defined in Mr. Johnson's patent. A contemporary recently said, concerning typefoundry in London:—

The Metropolis, having been long recognised as the great literary centre of the kingdom, we naturally find those minor trades and occupations which are dependent upon letter-press printing well represented within its bounds. This is especially the case with type foundry, and the chief rivals indeed of the London firms engaged in this business, although they may have their works elsewhere, are constrained to maintain an establishment in Town, and to keep heavy stocks on hand, in order that they may retain a hold on the trade. In all printing-offices, and more especially jobbing printing-offices, a sudden demand for a few pounds of type of a particular size, or of a special fount, is constantly arising, and the founder who is on the spot, and who can supply these at once, commands an advantage over his competitors who may not be so favourably situated.

Type foundry, like most other branches of manufacturing industry, has undergone important changes in later years from the introduction of automatic machinery. The Master Type Foundrymen's Association is essentially a conservative body, however, and these changes have been made so gradually and so imperceptibly that we question very much if a good workman could be found who could honestly say that he had lost a day's employment from the introduction of machinery. Even now, in every large establishment, it is found necessary to return, to a partial extent, to the old-fashioned style of casting by hand; and the curious may thus see in actual operation the most modern and improved modes of moulding type as well as those that may have been in use since the time of Schœffer, the first of type foundrymen, who flourished in the fifteenth century. This does not arise from the fact that the productive power of the machine is deficient, but because

small quantities of odd sorts of types are being regularly called for, which are more conveniently produced by hand. The ordinary type-casting machine in use will enable a workman to produce four or five times as many types as he could cast by hand with the "lever mould," and the "lever mould" in turn enables him to throw out at least a-third more than when working with the old-fashioned "ring-tailed mould." The most advanced type-casting machine now working is a most ingenious piece of mechanism, and effects a great saving of labour, for not only does it cast the type, but it also "breaks off," "rubs," and "grooves" it before it leaves the machine. "Rubbing" makes each side of the type perfectly flat and true, and is usually performed by youths, who receive 2½d. per thousand. After being "rubbed," the type is "set up" by another set of children, who also receive a halfpenny per thousand. In the machine we have spoken of, all these processes are performed automatically, and in an ordinary working day of ten hours it will turn out 30,000 types of that fount known as "Long Primer," in which type leading articles are commonly set. This is considerably more than a type founder produces by the lever mould on an average in a week.

Type founders are either paid by "number" or by "the pound;" that is to say, if they are employed on small types they are paid so much per thousand, if on large "jobbing" types by the weight they may produce. As every "fount" and pattern of type is paid at different rates, the list of prices by which a type founder's wages are calculated is so elaborate and complicated that it would puzzle many a good accountant. The ordinary earnings of a type founder when well employed will range from 30s. to 35s. per week. The "dresser," who examines the type and gives it the finishing touches before it is passed into the warehouse, is paid a fixed wage, which will average about 33s. weekly. So far as we can make out, the men and boys employed in this occupation enjoy average health. The heat from the furnaces and from the molten metal is not agreeable, and necessitates much attention to ventilation. The trade is in a great measure in the hands of a few large firms, however, and we are glad to say that the comfort and convenience of the workpeople in most of the establishments are fairly consulted. "Lead colic" is not unknown among the men; but if intemperance is avoided, and a due regard paid to cleanliness, type founding need not be feared as an unhealthy business.

Type Metal.—See METAL.

Typographic Errors.—See PROOF READING.

U.

Underlay.—Pieces of paper or cardboard placed under lines or parts of formes which do not "come up," in order to increase the impression upon them.

Unlocking Formes.—Loosening a forme by driving back the quoins. When a compositor unlocks a forme, he should be careful not to leave the unlocked quoins too slack, as the force necessary to loosen the others may "squabble" the matter, or occasion it to "hang."

Upper-case Sorts.—The sorts that are kept in the upper-case boxes.

V.

Vignette.—A small ornamental engraving cut on the wood with great delicacy, and with a large proportion of exceedingly fine lines. Engravings in vignette form require, in working, great attention to keep the edges light and clear, and in general it is necessary to scrape away one or two thicknesses of paper in order to lighten the impression and keep it clean; the edges being irregular and straggling, they are likely to come off too hard. Bearers type-high placed beside the block will be found advantageous; if they cannot be used, pieces of reglet, pasted on the frisket in the usual way, and taking a bearing on the furniture, must be substituted; but the high bearer is to be preferred where it can be adopted. The bearers equalize the pressure on the surface of the engraving, and protect the edges from the severity of the pull, which is always injurious to the delicacy of the external lines. They also render the subject more manageable, by enabling the pressman to add to or diminish the pressure on particular parts, so as to produce the desired effect. When great delicacy of impression is required in a vignette, it will be found beneficial, after the engraving is inked,

to roll the extremities with a small roller without ink; this will not only take away any superfluity of ink, but will prevent picks, and give lightness and softness to the edges, particularly where the effect of distance is required. If the extremities are engraved much lighter than the central parts, underlays should be pasted on the middle of the block, which will give a firmer impression to the central parts of the subject. It would save trouble and aid in getting a good impression if the block were engraved a little rounded on the face.

W.

Walter Press.—See MACHINES.

Warehouse Book.—A book, with pages annexed, on the following plan, and about the size of a foolscap quarto.

DICTIONARY OF TYPOGRAPHY. (No. Printed, 3,000.)				
Date.	Receipt of Paper, and of whom.	No. of Copies delivered.	To whom delivered, with his signature.	For whom.

When the paper is brought, the warehouseman should at once compare it with the bill of delivery, and, if right, enter the quantity immediately into the warehouse book. The number of printed copies delivered to the binder or publisher should also be entered, and his signature be taken at the time of delivery. This plan will prevent disputes with the bookseller or author relative to the receipt of paper or the delivery of sheets. Having entered the receipt of the paper, the warehouseman should then write on each bundle, with red chalk, the title of the book it is to be used for, and remove it into a convenient part of the warehouse, or into a store-room provided for that purpose.

Warehouseman.—A workman whose duty it is to receive paper into the warehouse, attend to its proper storing, give out paper to wet, superintend the hanging up of the paper to dry, and the taking them down again, the filling in and pressing of sheets, and the counting out and putting away of sheets. These operations are described in their alphabetical order.

Warping of a Cut.—A shrinking in the wood, caused by being carelessly laid by. When a woodcut left on the press all night has become warped, lay it on its face upon the imposing-stone, with a few thicknesses of damp paper underneath it, and place over it the flat side of a planer, with sufficient weight upon it; in the course of a few hours the block will be restored to its original flatness. This method is preferable to steeping the block in water, as the steeping swells the lines of the engraving, and, consequently, affects the impression.

Washing Formes.—Cleaning off the ink from the face of the type, the chase, &c. The forme being worked off, it is the pressman's duty to wash it clean from every particle of ink, not only for the cleanly working and well standing of the letter in the subsequent composing, but to save in making ready when the same letter gets to press again.—See LEX TROUGH, LEX, AND LEX BRUSH.

Waygoose.—The meaning, as given in various dictionaries, is a "stubble goose." As to the origin, we have not been able to find any account to be depended on, other than what is now given, which is nearly two hundred years old, and is taken from "Moxon's Mechanick Exercises," printed in 1683, the first practical work published on the art of printing:—"It is customary for all the journeymen to make every year new paper windows, whether the old ones will do or no; because that day they make them, the master printer gives them a way-goose; that is, he

makes them a good feast, and not only entertains them at his own house, but besides, gives them money to spend at the ale-house or tavern at night; and to this feast they invite the *Corrector*, *Founder*, *Smith*, *Joyner*, and *Inck-maker*, who all of them severally (except the *Corrector* in his own civility) open their purse-strings and add their benevolence (which workmen account their duty, because they generally chose these workmen) to the master printer's: but from the *Corrector* they expect nothing, because the master printer chusing him, the workmen can do him no kindness. These way-geoses are always kept about Bartholomew-tide. And till the master printer have given this way-geose the journeymen do not use to work by candle-light."

Wetting Paper.—Damping the sheets in order that they may be rendered more pliant and receive the impression more thoroughly. Having received a certain amount of paper from the warehouseman, the pressman lays one heap on the shelf attached to the wetting trough, laying the first token across the heap with the back of the quires towards his right hand, that he may know when to turn the token sheet, and that he may more readily catch at the back of each quire with that hand, for the purpose of dipping it. He then places the paper-board with its breadth before him on his right, on a table, laying a wrapper or a waste sheet of paper on the board, to prevent soiling the first sheet of the heap. He then takes a quire by the centre of the back with his right hand, and the edge of it in his left, and, closing his hands a little, that the quire may bend downward between his hands, he dips the back of the quire into the left-hand side of the trough, and, relinquishing his hold with the left hand, draws the paper briskly through the water with his right. As the quire comes out, he quickly catches the edge of it again in his left hand, and brings it to the heap, and, by lifting his left hand, bears the underside of the quire off the paper previously laid down, till he has placed the quire in an even position, he lays the back of it exactly upon the open crease of the former, and then lets the side of the quire in his left hand fall flat down upon the heap, and, discharging his right hand, brings it to the edge of the quire, and, with the assistance of his left thumb, still in its first position, opens or divides either a third or a half of the quire, according to the quality of the paper; then, spreading the fingers of his right hand as much as he can through the length of the quire, turns over his opened division of it upon his right-hand side of the heap. Having wet his first token, he doubles down a corner of the upper sheet of it on his right hand, so that the farther corner may be a little toward the left of the crease in the middle of the heap, and the other corner may hang out on the near side of the heap, about an inch and a half. This sheet is called the *token sheet*, being a mark for the press-man, when he is at work, to show how many tokens of that heap are worked off. Having wet the whole heap, he lays a wrapper, or waste sheet of paper, upon it: then, three or four times, takes up as much water as he can in the hollow of his hand, and throws it over the waste sheet, to moisten and soak downward into the wet part of the last division of the quire; after which, he places in the heap the label which the warehouseman must always furnish for each heap, and upon which are written the title of the work and the date of wetting, one-half hanging out so as to be easily read.

White.—The blank space between lines in titles, or between paragraphs, &c.—See **BLANKS**.

White Page.—See **BLANK PAGE**.

White Paper.—Until the second side of a sheet is printed, pressmen call the heap white paper.

Wilkinson's Cylindrical Rotary Printing Press.—A machine invented by Mr. Wilkinson, which works as follows:

The paper, being made of the proper width for the sheet intended to be printed, is wound upon a shaft in one continuous piece, in the same form as an ordinary roll of carpeting, and at the same time is damped so as to enable it to take a perfect impression. The type, which is slightly conical in form, is placed upon the surface of two cylinders, the circumference of each of which is exactly equal to the length of the newspaper to be printed. Each type is made in the precise line of the radius of the cylinder on which it is placed, and a small projection on one side of the type, with a corresponding indentation on the other, furnishes a means of locking the type together on the surface of the cylinder, so that it is impossible to displace them by the most rapid rotary motion. The machine, being set in motion by an ordinary power, the paper is unwound from its shaft by the action of an endless apron, by which it is carried forward and introduced between the first type cylinder and corresponding press roller, where the impression on one side of the paper is made. After the first impression, the paper is still carried forward, in a direct line, and immediately passes between the second type cylinder and press roller, by which the impression is made on the reverse side. The sheet being now printed on both sides, is still carried forward into the apparatus by which it is folded, and at the precise point when the folding process is completed, a heavy standing shears, by a single blow, separates it from its original roll, and it drops upon the floor a printed newspaper ready for immediate distribution.

Woodcuts.—See **ENGRAVINGS ON WOOD**, and **ILLUSTRATED BOOKS**.—In printing from woodcuts, the workman should, before pulling the first impression, see that the surface of the cut is perfectly clear from particles of dirt, and that no pin or lump of paste is on the tympan. He ought then to pull very gently, or he may injure some of the fine lines of the engraving. Neither the pressure nor the impression of an engraving on wood should be uniformly equal; if it be, the effect intended to be produced by the artist will fail; and, instead of light, middle tint, and shade, an impression will be produced that possesses none of them in perfection; some parts will be too hard and black, while other parts will have neither pressure nor colour enough, nor any of the mildness of the middle tint, which ought to pervade a large part of an engraving, and on which the eye reposes after viewing the strong lights and the deep shades.

Wood Type.—Type cut on wood, for large placards, &c. To prevent warping, all very large wood type should be set up on the edge when put away, so that both sides may be equally exposed to the air. In cleaning it, neither ley nor water should be employed under any circumstances. Turpentine, camphene, benzine, or kerosene oil may be used; but turpentine and camphene are the best. Procure a small, shallow pan: lay the forme flat on a board; pour out six tablespoonfuls of turpentine into the pan; touch the face of the brush to the turpentine, and pass it quickly over the forme before it evaporates. Six to eight spoonfuls of fluid will be found sufficient to clean a large forme, if thus used.

Working in Pocket.—See **COMPANIONSHIP**.

X

Xylography.—The art of engraving on wood.—See **ENGRAVING** and **ILLUSTRATED BOOKS**.

QUARCENTENARY OF ENGLISH PRINTING.

EIGHTEEN HUNDRED AND SEVENTY-ONE, remarkable in its very infancy as the date of the restoration of the German Empire, and the surrender of the finest city in Europe to a German imperial army—and which, as we write, is already full of presages of memorable transactions—will likewise be commemorative of the Four Hundredth Anniversary of an event which, brilliant as those may appear, in its moral and material aspects transcends the most renowned of martial deeds or dynastic achievements. In nothing so much as in this event has there ever been so powerful a confirmation of the sentiment, that "Peace hath her victories not less renowned than War." It has been well and truly said, that the Art of Printing is the most important invention that was ever introduced to the world, in its effects on the human mind, and, consequently, on all civilized society. It preserves and disseminates all discoveries and improvements in the arts and sciences. It commemorates all other inventions. It hands down to posterity every important event. It immortalises the actions of the great and good; and, above all, it extends and diffuses the Word of Truth to all mankind. The art had no small share in the glorious Reformation; and all the eulogiums that might be uttered in praise of Printing would fall short, immensely short, of its sublime merits.

The first printed book upon record is the Book of Psalms, Germany having the honour of being the birth-place of the Art in 1471; John Gutenberg, of Mentz, being the inventor.

Although the point has been disputed, the generality of English chroniclers tell us that Printing in England was first practised by WILLIAM CAXTON, in 1471, within the precincts of Westminster Abbey. What may have been the particular spot hallowed by the presence of the first printing press is difficult to determine—whether St. Catherine's Chapel or the Almonry is uncertain: all traces of the one, and almost all traces of the other, have disappeared. It is, however, a fact that the name by which printers call their trade meetings—a "Chapel"—is derived from the consecrated place where the founders of the profession first met: in a chapel of the Abbey. And the Patriarch of English printing is interred, if not within the walls of the Abbey, yet immediately underneath its shadow—probably within St. Margaret's Church. Into the incidents of Caxton's personal history we do not propose to enter, though the omission may subject us to the imputation of presenting "Hamlet" to our readers with the character of Hamlet himself eliminated. Suffice it to say, that, born in Kent in 1412, he was apprenticed to an opulent merchant in London, he went to the Low Countries (at the age of thirty) in 1442, and remained abroad nearly thirty years, during which time he made himself master of the art of printing. Another version is that he was sent to the Low Countries in 1464, by Edward the Fourth, to negotiate a treaty with the Duke of Burgundy, and "some time after" that period returned to England with the invaluable art. In either case he would be a sexagenarian when he began printing at Westminster. He died about the year 1491; but during his comparatively short typographical career he printed in all sixty-four different works, though in a literary point of view his works indicate but a low state of knowledge in England.

For the following account of some of Caxton's immediate successors, eminent men among the number, we are indebted mainly to a learned and ingenious writer in the eighteenth century—Dr. Conyers Middleton, Principal Librarian of Cambridge, who, in 1735, printed a curious "Dissertation concerning the Origin of Printing in England."

Contemporaneously with Caxton's operations at Westminster, two printers had established themselves in London in 1480. They are the first metropolitan typographers of whom mention is made. From their names JOHN LETTOU and WILLIAM MACHLINIA—they are surmised to have been foreigners. Their nationality, however, is uncertain. The vicinity of Allhallows Church was their place of business. Law work was their chief production; and, whether owing to the fact that Londoners were less litigious in the fifteenth century than in times more modern, or from some other cause, they appear to have "dried up" (to use a technical expression) in 1483. The description of type used by this firm was a Gothic, very coarse, and more rude than Caxton's.

However obscure may be the evidence as to who taught the English prototypographer the art and mystery of printing, there is quite as much obscurity in the enquiry, To whom did Caxton impart a knowledge of the art? Associated with him, indeed, was WYKRYN DE WORDE, but whether as Devil or Father of the Chapel does not appear. He was a native of the smiling province of Lorraine, at this moment more than ever famous as one of the great battle-fields in the Franco-German war just ended, and which has passed from the hands of the conquered into the gripe of the conqueror. Whatever may have been the relation in which he stood towards Caxton, with him de Worde remained till the death of the former in 1491. Succeeding to the business at Westminster, he continued to prosecute it in Caxton's own house.

where he remained for a period of six years, and simultaneously carried on a branch concern at a house in Fleet-street, distinguished by the sign of the Sun. In the seventh year of the reign of Henry the Seventh (1491), he appears to have been the recognised Parliamentary printer, Acts printed in that day, surmounted with the King's Arms, having the cypher, by way of imprint, which Caxton himself used, and which de Worde adopted as his own. His connection with Caxton brought him in contact with the learned and noble, and in course of time he styled himself Printer to Margaret, the King's grandame. His skill in the art has been highly commended. His first great undertaking, as soon as he became M.P., was to cut a new set of punches, which he sunk into matrices, and cast several founts of type for his own use. One circumstance especially conduces to the belief that he was his own founder: the letter used in his first-printed books was of the description used by all the London printers of the period. It was truly cast, ranging perfectly; and for many years afterwards no one excelled him, and he had few equals, in the variety and size of his types. Excellence was also a characteristic of his professional skill; while he was a person of great literary accomplishments and of unblemished reputation. The Roman letter now in general use was by him introduced into England. To him also we owe the commencement of the Year-Book. Being a man of great genius and considerable scope of fancy, he was something more than a mere printer, every department connected with book-making and publishing being combined under his direction. He died somewhere about the year 1534, being then nearly eighty years old. In his will, dated the 5th June, 1534, he wrote himself citizen and stationer of London. He commended his soul to God and to the blessed St. Mary, and directed his body to be buried in the parochial church of St. Bride's, in Fleet-street, before the high altar of St. Katharine. His bequests consisted of the following:—For tythes forgotten, 6s. 8d.; to the fraternity of our Lady, of which he was a brother, 10s.; to pray for his soul; to his maid-servant, £3 in books; to Agnes Tidder, widow, 40s. in books; to Robert Darby, £3 in printed books; to John Barbanson, 60s. in books and ten marks; to Hector, his servant, five marks sterling in books; to Wistin, 20s. in printed books; to Nowel, a book-binder in Shoe-lane, 20s. in books; to Simon, another servant, 20s. in printed books; to every one of his apprentices (the number of whom is not stated), £3 in printed books; to John Butler, a former servant, £6 in books; to a third servant, John Gauer, printed books to the amount of twenty marks; to Henry Pepwell, stationer, £4 in printed books; to John Gouge, in addition to releasing him from a certain debt, £4; to Robert Copland, ten marks; to one Alard, bookbinder, the fourth individual described as his servant, and which is a relative term for workman, £6 15s. 4d.; and forgive John Bedel, stationer, all the money he owes me, &c., for executing this my will, with James Gauer; and that they, with the consent of the wardens of the parish of St. Bride's, purchase at least 20s. a year in or near the City, to pray for my soul." Thus we see de Worde was liberal as well as rich; for the legacies above-mentioned, looking at the value of money in the fifteenth century, represents a considerable fortune. It is pleasing to reflect on the consideration which he bestowed on his workpeople, all of whom appear to have been provided for more or less in the good man's last will and testament. From the tenour of this document, de Worde seems to have been childless and spouseless; but, seeing that there was "a widow in the case," it is just possible that he was not so entirely absorbed in commercial enterprise as to have remained all his lifetime untouched by gentler influences.

Next to this famous lieutenant of our Premier Printer comes RICHARD PYNXON, or Pinson. Of Norman lineage, he operated with de Worde in Caxton's establishment. Having become an expert workman, ambition prompted him to venture into business on his own account during Caxton's lifetime. At Court he was held in much esteem, and, besides being honoured with the commands of the lady Margaret, mother of Henry the Seventh, from His Majesty himself he received a patent as King's Printer. With Wynkyn de Worde, who survived him about six years, he maintained the friendship of earlier years, thus showing an exception to the adage that two of a trade can never agree. Many books, we are told, were printed by this great artist, and "he caused many pretty devices to be stamped upon them." The year 1520 is mentioned as the period of his death. His first book, bearing date 1493, is entitled, "A Compendious Treatise Dialogue of Dives and Pauper," and contains the following remarkable passage relating to the Fair Rosamond, which we render in modern orthography:—

We read that in England was a King that had a concubine, whose name was Rose, and for her great beauty he called her Rose-a-Monde—that is to say, Rose of the World; for he thought that she surpassed all women in beauty. It befel that she died and was buried while the King was absent; and when he came home, for great love that he had to her, he would see the body in the grave, and, when the grave was opened, there sat an horrible toad upon her bosom, between her breasts; and a foul adder bit her body about the middle, and she stank so that the King, nor any other, could stand to see the horrible sight. Then the King did shut again the grave, and did write these two verses upon the grave:—

Hic jacet in tumba rose mundi non rosamunda.
Non redolet sed olet quod redolere, sole, &c.

JULIAN NOTARY flourished at Westminster in 1500. He had previously, however, practised the art in France. In 1503 he had removed to St. Clement's parish, and near to Temple-bar; and being, possibly, one of those rolling stones which are said to gather no moss, in 1515 he had shifted his quarters to St. Paul's Churchyard, "near the west door, by my Lord of London's palace," at the sign of the Three Kings.

WILLIAM FAQUES, reputed to be an excellent workman, and resident at St. Helen's, was King's Printer in 1503; his name being united with that of Richard Pynson in the royal letters patent. Their joint imprint, describing themselves as King's Printers, is attached to a certain Act of Parliament passed in the nineteenth year of the reign of Henry the Seventh (1503).

Briefly recording the name of JOHN SKOT, or SCOTT,—who is supposed to have been instructed by de Worde or Pynson, and who operated first in the neighbourhood of Newgate, and subsequently in Bishopsgate Without, and also that of THOMAS GODFREY, of Temple-bar, we are introduced to

JOHN RASTELL, a gentleman educated at Oxford University, where he chiefly devoted himself to the study of law. Printing being at that time deemed a profession worthy of the scholar or man of genius, Rastell, on quitting Oxford in 1517, embarked in the business. Remarkable for piety and learning, he became intimate with the eminent Sir Thomas More, whose sister Elizabeth he espoused in marriage. He was zealous for the Catholic cause, and a great hater of the policy of Henry the Eighth. This John Rastell died in 1535, leaving as issue two sons—John Rastell, a justice of the peace, who had a daughter married to Dr. Laugher, Chancellor of the diocese of Exeter; and William Rastell, author of a book of law-terms, and a very noted printer of law books. The first "Abridgement of the English Statutes" was by him printed, and the preface urges the following reasons for its publication:—

Because that the laws of this realm, as well the statutes and other judgments and decrees, be made and written most commonly in the French tongue, divers men thereof muse, and have oftentimes communication and argument considering, that in reason every law whereto any people should be bounden ought and should be written in such manner, and so openly published and declared, that the people might soon, without great difficulty, have the knowledge of the said laws. But the very cause why the said laws of England were written in the French tongue should seem to be this: First, it is not unknown that when William, Duke of Normandy, came into this land, and slew King Harold and conquered the whole realm, there was a great number of people, as well gentlemen as other, that came with him, which understood not the vulgar tongue that was at that time used in this realm, but only the French tongue; and also because the said King, and other great wise men of his council, perceived and supposed that the vulgar tongue which was then used in this realm was, in a manner, but homely and rude, nor had not so great copy and abundance of words as the French tongue then had, nor that vulgar tongue was not of itself sufficient to expound and declare the matter of such laws and ordinances as they had determined to be made for the good government of the people so effectually, and so substantially, as they could indite them in the French tongue; therefore they ordered, wrote, and endited the said laws, that they made, in the French tongue. And furthermore, long after the coming of King William the Conqueror, because that the use of the French tongue in this realm began to diminish, and because that divers people that inhabited within this realm could neither speak the vulgar tongue of this realm nor the French tongue, therefore the wise men of this realm caused to be ordered that the matters of the law and actions between parties should be pleaded, answered, debated, and judged in the English vulgar tongue, and moreover that written and entered of record in the rolls in the Latin tongue, because that every man generally and indifferently, might have the knowledge thereof, as appeareth by a statute made in the thirty-sixth year of Edward the Third [1362]; wherefore, as I suppose, for these causes before rehearsed, which was intended for a right good purpose. But yet, besides this, now of late days the most noble Prince, our late sovereign lord, King Henry the Seventh—worthy to be called the Second Solomon, which excelled in politic wisdom all other princes that reigned in this realm before this time—considering and perceiving that our vulgar English tongue was marvellously amended and augmented, by reason that divers famous clerks and learned men had translated and made many noble works into our English tongue, whereby there was much more plenty and abundance of English used than there was in times past; and by reason thereof our vulgar tongue, so amplified and sufficient of itself to expound any laws or ordinances which was needful to be made for the order of this realm; and also the same wise Prince considering that the universal people of this realm had great pleasure and gave themselves greatly to the reading of the vulgar English tongue, ordered and caused that all the statutes and ordinances which were made for the commonwealth of this realm in his days should be endited and written in the vulgar English tongue, and to be published, declared, and imprinted, so that then universally the people of the realm might soon have the knowledge of the said statutes and ordinances, which they were bound to observe, and so by reason of that knowledge to avoid the danger and penalties of the same statutes, and also the better to live in tranquility and peace; which discreet, charitable, and reasonable order, our most dread sovereign lord that now is, King Henry the Eighth, hath continued and followed, and caused all the statutes that hath been made in his days to be also endited and written in our English tongue, to the intent that all his liege people might have the knowledge thereof. All which goodly purposes and interests, in my mind oftentimes revolved, hath caused me to take this little pains to translate out of French into English the abbreviation of the statutes, which contain forfeitures and penalties, made before the first year of the reign of our sovereign lord King Henry the Seventh. And also, though the statutes made as well in the time of the said King Henry the Seventh as in the time of our sovereign lord that now is be sufficiently endited and written in our English tongue, yet, to them that be desirous shortly to know the effect of them, they be more tedious to read than though the matter and effect of them were compendiously abbreviate; wherefore now, as far as my simple wit and small learning will extend, I have here taken upon me to abridge the effect of them more shortly in this little book, beseeching all them to whom the sight hereof shall come to accept it in gree; and though they shall fortune to find anything mis-reported, or omitted by my negligence, else by negligence of the printer, that it would like them to pardon me, and to consider my goodwill, which have intended it for a commonwealth, for the causes and considerations before rehearsed; and also that it fortune them to be in doubt in any point thereof, yet, if it please them, they may

refer to the whole statute whereof this book is—but a bridg-ment, and in manner but a kalender. [Modern critics, often more captious than equitable, would do well to make a note of this appeal to the forbearance of critics of the sixteenth century]. And furthermore I will advertise every man that shall fortune to have any matter in ure to resort to some man that is learned in the laws of this realm, to have his counsel in such points which he thinketh doubtful concerning these said statutes, by the knowledge whereof, and by the diligent observing of the same, he may the better do his duty to his Prince and sovereign, and also live in tranquility and peace with his neighbour, according to the pleasure and commandment of Almighty God, to whom be eternal laud and glory. Amen.

Parting company from this limb of the law, whose legal training is instanced by nothing so much as his verbosity, we next make the acquaintance of ROBERT and WILLIAM COPLAND—the first of whom worked either with or for Wynkyn de Worde, in whose *post mortem* favours he shared as a legatee. Besides being a printer, Robert was a stationer and bookseller, as well as translator and author. A house in Fleet-street, displaying the sign of the Rose Garland, was his principal place of business. William is described as the son of Robert, whose first production issued from the press in 1515. Among other works he printed the "Introduction of Knowledge," by Andrew Borde, physician, treating of the natural disposition of an Englishman, and of the money then used. A woodcut represents an Englishman—apparently the counterfeit presentment of the Bluff King Hal—in a state of nudity, holding over one arm a piece of broadcloth, while his dexter hand grasps a pair of shears; and, in illustration of the fickle-mindedness for which Anglo-Saxons have an ancient reputation, he is thus made to soliloquise:—

I am an Englishman, and naked I stand here,
Musing in my mynde what rayment I shall were;
For now I were this, and now I wil were that,
Now I wil were, I cannot tell what.

Contemporaneously with these laymen, who continued in business till 1561, we have as a fellow-craftsman one of the Judges of the Court of Common Pleas JOHN BUTLER, or BOUTLER, who had a printing-house at the sign of the St. John the Evangelist, in Fleet-street; but, apparently devoting himself with greater assiduity to jurisprudence than to typography, he is represented to have done little business in the latter. It would scarcely puzzle an English judge, much less a Philadelphian lawyer, to determine which of the two professions, as a rule, brings the greater amount of grist to the mill; and his limited practice in the one instance may have been the result of augmented duties in the other.

Four years later (1524) ROBERT WYER, whose books, like those of many other early printers, contained no date, practised near Charing-cross.

In 1525, coincident with De Worde, Pensen, and Rastell, ROBERT REDMAN was known as a law printer, and, after Pinson's death, occupied his premises, preserving the sign of the George.

RICHARD BANKS, in 1540, having then been several years in business, was granted letters patent by Henry the Eighth for printing the Epistles and Gospels.

LAURENCE ANDREW, who, before he became a printer, had been a translator, and was a native of Calais, practised the art in Fleet-street, at the sign of the Golden Cross, near Fleet Bridge.

JOHN REYNES, whose place of business in 1527 was in St. Paul's Churchyard, at the sign of St. George, and who combined bookselling and bookbinding with the typographic branch, was noted for the pretty devices on his book-covers, such as the

arms and supporters of Jesus Christ, with the motto, "Redemptoris mundi arma."

THOMAS BERFHELET, Esq., who, on the death of Pinson, became King's Printer, about this time occupied premises in Fleet-street, with the sign of Lucretia Romana. In 1546, by Royal command, he printed a proclamation directing the suppression of books containing "pernicious errors and heresies," and wherein it was enjoined that "none shall receive, take, have, or keep in his or her possession, the text of the New Testament of Tyndal's or Coverdale's translation in English, nor any other than is permitted by the Act of Parliament."

RICHARD FAWKES, presumably a foreigner, and possibly an ancestor of the renowned Guido, printed an "indulgence" in 1520.

JOHN HAWKINS, in 1533, printed "Merlin's Prophecies," from which the following is an extract, and which a little ingenious rendering might be made applicable to current events:—

Seven and ten addyd to nine*
Of France her woe this is the sygne,
Tamy's river twys y frozen,
Walk sans wetyng shoes ne hozen.
Then comyth forth, Ich understonde,
From town of Stoffe to fattyn Londe,
An herdie chyltan: I woe the morne
To France that ever he was borne.
Then shall the sythe bowayle his bosse;
Nor shall grim berry's make up the losse.
Young Symmele shall again miscarrye:
And Norway's pryd again shall marreye,
And from the tree blossums feele,
Ripe fruit shall come, and all is well.
Reaume † shall dance honde in honde,
And it shall be merrye in Old Inglonde.
Then old Inglonde shall be no more, §
And no man shall be sorrie therefore,
Geryon shall have three hedes | agayne,
Till Hap-burg ¶ makyth them but twayne."

Another noted printer at this time was WILLIAM RASTELL, a nephew of Sir Thomas More, already referred to. He was an excellent classical scholar, having matriculated at Oxford, and subsequently studied in Lincoln's-inn. In 1554, when in his forty-sixth year, he was made a sergeant-at-law, and, a little before the demise of Queen Mary, was appointed one of the Justices of the Court of Common Pleas. The chief productions of his press were law works and religious publications, his own creed being that of a Roman Catholic, in the maintenance of which he was conspicuous for his zeal. On the accession of Queen Elizabeth, he retired to Louvain, and in 1565 died there.

THOMAS GIBSON, being a studious man as well as a printer, compiled the first Concordance to the English New Testament (1534).

WILLIAM MARSHALL, described as a gentleman or merchant, having interest at Court, was licensed to print the first Reformed or Protestant Primer abrogating Papal Supremacy in 1534, the year of the Reformation, and which had the sanction of the Queen, Anne Boleyn.

With the name of the subject of our succeeding biographical notice is associated one of the most momentous events in the

* 7, 10, 9 = 26. On the 26th of February, in the present year, the preliminaries of peace between France and Germany were signed at Versailles.

† Who might be Von Moltke.

‡ The German potentates have lately been dancing hand in hand with the King-Emperor, who, in his turn, has been dancing a minuet with his beloved nephew, the Czar.

§ No more a monitor in "Dame Europa's School," Germany, Alsace, and Lorraine.

¶ When Austria takes vengeance on Prussia for her own discomfiture at Salowa, and aids France in recovering her conquered provinces.

history of Christendom—the printing of the first English Bible. This was RICHARD GRAFTON, Esq. Born in London, at the latter end of the reign of Henry the Seventh, his career as a printer extended through the reign of four sovereigns—Henry the Eighth, Edward the Sixth, Mary, and Elizabeth. He was endowed with a liberal education, appears to have been a linguist, and was on terms of intimacy with the Upper Ten Thousand of his own day, although in letters addressed to Archbishop Crammer and Oliver Cromwell respectively, he refers to himself as a grocer. The year 1537 is mentioned as the period of his manipulations in the metropolis; but previously to this date he was a resident of Antwerp, in which city he printed Tindal's New Testament, and afterwards his Bible, corrected and revised by Miles Coverdale. Copies of the former having obtained circulation in England, they were bought up by the Bishop of London, Cuthbert Tunstal, and publicly burnt at St. Paul's Cross. He moreover issued a prohibitive pastoral, in the terms following:—

Cuthbert, by the permission of God, Bishop of London, unto our well-beloved in Christ, the Archdeacon of London, or to his official: health, grace, and benediction. By the duty of our pastoral office, we are bound diligently with all our power to foresee, provide for, root out, and put away all those things which seem to tend to the peril and danger of our subjects, and especially to the destruction of their souls. Wherefore we, having understanding by the report of divers credible persons, and also by the evident appearance of the matter, that many children of iniquity, maintainers of Luther's sect, blinded through extreme wickedness, wandering from the way of Truth and the Catholic faith, craftily have translated the New Testament into our English tongue, intermeddling therewith many heretical articles and erroneous opinions, pernicious and offensive, seducing the simple people, attempting by their wicked and perverse interpretations to prophanate the majesty of the scripture, which hitherto hath remained undefiled, and craftily to abuse the most holy Word of God and the true sense of the same, of the which translation there are many books imprinted, some with gloses and some without, containing in the English tongue that most pestiferous and most pernicious poison, dispersed throughout all our diocese of London in great number; which truly, without it be speedily foreseen, without doubt will contaminate and infect the flock committed to us, with most deadly poison and heresy, to the grievous peril and danger of the souls committed to our charge, and the offence of God's divine Majesty. Wherefore we, Cuthbert, the bishop aforesaid, grievously sorrowing for the premises, willing to withstand the craft and subtlety of the ancient enemy and his ministers, which seek the destruction of my flock, and with a diligent care to take heed unto the flock committed to my charge, desiring to provide speedily remedy for the premises; we charge you jointly and severally, and by virtue of your obedience straightly enjoin and command you, that by our authority you warn, or cause to be warned, all and singular, as well exempt as not exempt, dwelling within your archdeaconries, that within thirty days' space, whereof ten days shall be for the first, ten for the second, and ten for the third peremptory terms, under pain of excommunication and incurring the suspicion of heretic, they do bring in, and really deliver unto our vicar-general all and singular such books containing the translation of the New Testament in the English tongue; and that you do certify to us, or our said commissary, within two months after the day of the date of these presents, duly, personally or by your letters, together with these presents, under your seal, what you have done in the premises, under pain of contempt. Given under our seal the 22nd October, in the fifth year of our consecration, 1526.

This pastoral, which was likewise addressed to the Archdeacons of Middlesex, Essex, and Colchester, failed of its intended effect. Great complaints on the part of the bishops and clergy were made to the King in reference to this translation, whereupon His Majesty resolved to take the matter into his own consideration. In 1533 the Convocation, among other things, decreed that the Scriptures should be translated into the vulgar tongue; but its execution was delayed.

(To be concluded in a Special Supplement to our next Number.)

At this time Grafton occupied in part the house of the Grey Friars (this order having been dissolved), which was afterwards granted by Edward the Sixth for a hospital for the maintenance of the Christchurch Boys. His earliest work was the first edition of the English Bible, by Miles Coverdale, printed abroad in 1535—either at Paris or Marsburgh, in the province of Hesse. It was a folio volume, and contained the following dedication (altered to the present orthography):—

Unto the most victorious Prince and our most gracious sovereign lord, King Henry the Eighth, King of England and of France, Lord of Ireland, &c., Defender of the Faith, and under God the chief supreme head of the Church of England. The right and just administration of the laws that God gave unto Moses and unto Josuah; the testimony of faithfulness that God gave of David; the plenteous abundance of wisdom that God gave unto Solomon; the lucky and prosperous age with the multiplication of seed which God gave unto Abraham and Sarah his wife, he given unto you, most gracious Prince, with your dearest just wife and most virtuous Princess, Queen Jane. Amen.

To this dedication is the signature—

Your Grace's humble subject and daily orator, MILES COVERDALE.

Soon after the completion of this Bible, certain "Injunctions to the Clergy, by the authority of the King's Highness" were promulgated by Cromwell, in his capacity as Keeper of the Privy Seal. One enjoined, "That every person or proprietary of any parish church within this realm shall, on this side the Feast of St. Peter *ad vincula* (1st August) next coming, provide a book of the whole Bible, both in Latin and also in English, and lay the same in the choir for every man that will to look and read thereon; and shall discourage no man from the reading any parts of the Bible in Latin or English, but rather comfort, exhort, and admonish every man to read the same as the very Word of God and the spiritual food of man's soul, whereby they may better know their duties to God, to their sovereign lord the King, and their neighbours; ever gently and charitably exhorting them, that, using a sober and modest behaviour in the reading and inquisition of the true sense of the same, they do in no wise stiffly or eagerly contend to strive one with another about the same, but refer the declaration of those places that be in controversy to the judgment of them that be better learned."

In the year following a folio edition of the Bible made its appearance, having the title, "The Bible, which is all the Holy Scripture, in which are containd the Olde and Newe Testament, truly and purely translated into Englyshe. By Thomas Matthews." At the beginning of the books of Prophecy the initials R. G. are printed at the head of the page, E. W. at the foot, — representing the names respectively of Richard Grafton and Edward Whitechurch, who were associated in partnership, and at whose charge and expense the publication was undertaken. At the end of the Old Testament are the initial letters W. T., indicating that William Tyndall was the translator. Archbishop Crammer, who had in the interval been raised to the See of Canterbury, patronised this edition, and, using his interest with Cromwell, procured the royal licence for it. Moreover the clergy were directed to provide within a certain time "one book of the whole Bible of the largest volume in English, and the same set up in some convenient place within their churches that they have cure of, whereas their parishoners might most commodiously resort to the same and read it; and that the charges of this book should be rateably borne between them and the parishoners aforesaid; that is to say, one-half by the parson and the other half by them."

At this early stage of the art literary piracy was not unknown, and in a letter to Crammer, dated 13th August, 1537, Grafton complained of a design on the part of Dutch printers to issue

the later edition of the Bible. He also reiterated this complaint to his friend, the Lord Privy Seal (Cromwell), urging that a very great loss to himself and partner, as well as injury and wrong to the public, would result from this contemplated infringement. To His Lordship he represented that they had incurred a large outlay—not less a sum than £500—in completing this edition, a great portion of which sum would be lost to them if the Dutch printers fulfilled their design to print the same in a smaller type and lesser volume, and thus be enabled to undersell them (Grafton and Whitechurch). And not only themselves, but the public too, would suffer by the threatened piracy; for, the Dutch printers being unable to speak or write English, their edition would probably be "exceedingly erroneous and incorrect," they being generally so covetous as not to give sufficient encouragement to any learned man to oversee and correct the press, and its defects would culminate in bad paper and print. Grafton therefore besought Cromwell to procure from his Royal master a three-years' exclusive copyright, adding the further request—having a keen eye to business—that every curate throughout the realm should be requested to possess one copy of the Bible, while every abbey should be supplied with six copies; the inference herefrom deduced being that he contemplated another edition, the number actually printed (fifteen hundred copies) being insufficient to supply a demand so large as would thus be created. Ultimately it was resolved that a revised edition of Matthews' version should be printed. Grafton and Whitechurch were accordingly selected, and, there being better printers in France than in England at that time, and better paper also obtainable in that country, the printing was by Royal authority transferred to Paris. Here, however, an untoward event happened. On the 17th December, 1538, the Inquisition inhibited the printers from prosecuting their work, threatening them with canonical pains and penalties in case of disobedience. Some were produced before the dread tribunal, and charged with heresy; while the English proof-readers fled from Paris. The entire impression, 2,500 sheets, was seized and confiscated; but, on the intercession of Cromwell, some of the English workmen returned to Paris, and brought away the presses, type, and compositors; by which means the work was resumed in London, and completed in the course of the year following. In November, 1539, Royal letters-patent directed that no printers other than those whom Cromwell might appoint should within five years from that date be allowed to print the Bible in the English tongue. Among those to whom the privilege was extended were John Biddel, Thomas Barthelet, &c. In this year Crammer's, or the Great Bible (as it was denominated), made its first appearance. It was entitled, "The Bible in Englyshe; that is to say, the contents of all the Holy Scripture, both of the Olde and Newe Testament, truly translated after the veryte of the Hebrue and Greeke texts by the dyligent studeye of dyverse excellent learning men, expert in the forsayde tonges. Prynted by Richard Grafton and Edward Whitechurch. Cum privilegio ad imprimendum solum, 1539."

Grafton was so much a Man of Mark at Court that to him and Whitechurch alone was granted the Royal privilege of printing "the masse-book, the grille, the antiphoner, the himptuall, the portans, and the prymer, both in Latyn and in Englyshe of Sarum use, for the province of Canterbury." In 1545, in virtue of the said patent, he printed Henry the Eighth's Latin and English Primer, which was worked in two colours—black and red. In the first year of the reign of Edward the Sixth (1547), Grafton was favoured with a special patent whereby he had the sole printing of all the statute books then extant. A later patent

(18th December, 1548) authorised Grafton and Whitechurch to "take up and provide, for one year, printers, compositors, &c., together with paper, ink, presses, &c., at reasonable rates and prices." In 1549 he printed a Royal proclamation, which was afterwards embodied in an Act of Parliament, abolishing and repressing certain religious books and images; and in 1553, on the death of Edward the Sixth, he was employed to print the proclamation whereby Lady Jane Grey was declared to be successor to the crown. On the accession of Mary, however, he ceased to be a Court favourite. He was deprived of his patent as King's Printer; his "little bill" against the Crown, amounting to £300, was ignored; and he was incarcerated during six weeks in the Fleet prison. His overt act of high treason, in printing the Jane Grey proclamation—as his act of official duty was then regarded—is alleged as the reason for the pains and penalties thus inflicted. It is, however, thought that his Evangelical principles, and especially his connection with the printing of the English Bible, was at the bottom of his persecution. During his incarceration, and while out of business, he devoted himself to literary pursuits, an abridged History of England being the fruit of his labours. It was not printed till 1562. In the interval between 1553-57, one Richard Grafton, believed to be our famous printer, represented London in the House of Commons; and in 1562 he was member for Coventry. On the accession of Queen Elizabeth, Grafton published a book describing "The Passage of our most drad Sovereigne Lady Queen Elizabeth through the City of London to Westminster, the Daye before her Coronation, anno. 1558."

EDWARD WHITCHURCH, Esq., associated with Grafton in the Patent as King's Printer, was originally a merchant, his place of domicile being the "Well with two Buckets,"—typifying the source whence they drew auriferous supplies. According to a statement of Fox, in his "Acts and Monuments," Whitechurch was associated with Grafton in political troubles as well as in successful trade, and, in 1541, being suspected of not having confessed, was rendered amenable for a breach of the Six Articles. In the year 1551, a general amnesty was proclaimed throughout the Abbey on the occasion of the Coronation of Queen Mary, all prisoners at the Tower and at the Fleet prison, with fifty-two others, including Grafton and Whitechurch, being excepted. For many years these two continued in friendship as well as in partnership. Whitechurch married the widow of Archbishop Cramer, and continued in business till 1554. Grafton's and Whitechurch's names were sometimes printed separately in the same books, particularly those which they printed with the royal privilege "ad imprimendum solum"—as the Bible, the New Testament, and the Primers. After a certain number of copies with the imprint of Grafton had been wrought off, the name was lifted out of the forme, and that of Whitechurch substituted.

TIMOTHY PELLE, a presumed relative of a famous Paris printer of the same surname, was in business as a law printer, at the sign of the Maiden's Head, in St. Paul's Churchyard, in 1538.

In the year 1541 we are introduced to JOHN WAYLAND, citizen and scrivener of London, describing himself as "Allowed Printer," from his obtaining from Queen Mary letters-patent for printing Prayer Books. The "Blue Garland," in Fleet-street, was at one time his place of occupation; at another, the "Sun," near the Conduit. In 1555 he printed an account of the arrival and landing of Philip of Spain, and his marriage with Queen Mary at Winchester, together with their triumphal entry into London.

RICHARD JUGGE, bred a scholar, and elected from Eton to

King's College in 1531, is described as having been "most curious in his editions of the Old and New Testaments, bestowing not only a good letter, but many elegant initial letters and fine wood-cuts." He continued in business about thirty years, and was succeeded by his wife Joan.

ROBERT CROWLEY, a native of Gloucestershire, was educated at Oxford. In 1542, when he took the degree of Bachelor of Arts, he was a probationary Fellow of Magdalen College. When Edward the Sixth began to reign, Crowley lived in Ely-rents, Holborn, printing and vending books, and at the same time preaching in the City; but upon the accession of Mary, he went, as many other English Protestants went, to Frankfort. After Mary's decease he returned to London, and had several benefices bestowed upon him—among the number, St. Giles's, Cripplegate, of which at the time of his own demise he was Vicar.

JOHN CAWOOD, Esq., descendant of an old Yorkshire family, became Queen's Printer to Mary, on the deposition of Richard Grafton. In 1555, Philip and Mary then occupying the throne, he printed the proclamation whereby the printing, sale, or possession of heretical (that is, Protestant) books was declared a penal offence, punishable by immediate death. Another proclamation, issued from his press in the same year, was directed against the papers, works, or writings of Martin Luther, John Calvin, Philip Melancthon, Hugh Latimer, Miles Coverdale, Tindall, Cramer, and other Protestant Reformers; and everyone printing, uttering, selling, reading, or keeping any of the same were warned that they would incur the danger and penalties contained in the statute, with their Majesties' high indignation and displeasure, and further answer at their uttermost peril.

In St. Paul's Churchyard, which appears to have been the chief typographical centre, MICHAEL LOBLEY operated from 1539 to 1560. "St. Michael" was his sign. During the reign of the eighth Henry he was adjudged guilty of heretical privity, or perversion, and required to abjure and to bear faggots by way of penance. He was Upper Warden of the Stationers' Company in the first year of the Elizabethian reign, when Her Majesty renewed the Company's charter.

JOHN MAYLETT—or, as he was severally called, Maylart, Mayler, Maler—represented as "a Grocer by Company," practised the art at the "White Bear," in Botolph-lane, near Billingsgate. A scholar and zealous Protestant Reformer, he, like Whitechurch, involved himself in difficulties on account of the Six Articles, in 1541, "Being a sacramentary, a rayler against the masse: for calling the sacrament of the aulter the baken God; and for saying that the masse was called beyond the sea, misse, for that all is amisse in it."

ANTHONY MALERT, or Marler, is supposed to have been a relative of the preceding John Maylert. In the library of the British Museum is a very fine illuminated folio Bible, printed on vellum, and containing the following dedication:—"This book is presented unto your most excellent Highness, by your loving, faithful, and obedient servant and daily orator, Anthony Marler, of London, haberdasher." It bears date 1540.

JOHN HERTFORD, after having failed to revive the art at St. Albans, where it was dormant between the years 1486 and 1536, removed to London—finding his "occupation gone" among the monks, owing to the Reformation—and was in business in Aldersgate-street from 1538 to 1548.

THOMAS RAYNALDE, another of the craft plying his trade in St. Paul's Churchyard, in 1540 printed "The Birth of Mankind,"—the first English book embellished with rolling-press cuts, and

of which he is believed to have been also the author. He continued in business till 1555.

RICHARD WOLFE, Esq., was a man of considerable eminence, in great favour with Henry the Eighth, Cromwell, Archbishop Cranmer, &c. The "Brazen Serpent," a device common among foreign printers, was the sign of his office, which was in St. Paul's Churchyard. The premises he built from the ground, on the site of an old Chapel which, on the suppression of the monasteries, he bought from Henry VIII., and where he had several other tenements, subsequently purchasing several leases from the Dean and Chapter of St. Paul's. Stowe says of him, that in the year 1549 the bones of the dead in the charnel-house of St. Paul's, amounting to more than a thousand cartloads, were at his expense removed to Finsbury-fields for interment. He was believed to be a native of Switzerland. He was the first who had a Royal patent as printer in Latin, Greek, and Hebrew, whereby he was appointed King's Bookseller and Stationer. In virtue of this patent he enjoyed an annuity of £1 8s. 6d., besides all other profits and advantages belonging to his office, for the term of his life; and all booksellers and printers were forbidden to print or sell any books printed at his own charge or in his name, under pain of forfeiting such books, &c. During the reign of Queen Mary, he desisted from printing, spending his time in the collection of materials for a history which he published. After his death, which occurred subsequently to the year 1574, he was succeeded in business by his widow.

JOHN DAY was no mean character among typographers, having practised for forty years (1544-83), excepting in the interval of Queen Mary's reign, which time he devoted to making improvements in the art. He was the first in England who employed the Saxon letter, and brought Greek to great perfection, as well as Italic and other characters, of which he had a large variety. Among the literary curiosities at Gilbert's book-store, Southampton, is an old Bible known as the "Bug Bible," with prologue by Tindall, which Day printed in 1551. It derives its name from the peculiar rendering of the fifth verse in the ninety-first Psalm, which reads thus: "So that thou shalt not need to be afraid for any bugs by night." This edition is very scarce, and rarely finds its way into the book-market. In 1553 he obtained a patent for the sole right of printing a Catechism in English; in 1559, for printing "Cunningham's Cosmographical Glass;" in 1597, for printing the Psalms in metre. Himself a lover of learning, he promoted it by handsome gifts of books. The Harleian Manuscripts record that he gave several benefactions to King's College in 1571; and in 1583 he assigned to the Stationers' Company his own copyright in certain books for the benefit of the poor of the Company. In 1584 he was buried in the parish church of Bradley-Parva, in the County of Suffolk. A tablet erected to his memory relates that

Two wives he had, partakers of his payne,
Each wife twelve babes, and each of them one more.

One of his twenty-five offspring, JOHN DAY, was associated with him in business, the two names being conjoined in the patent relating to the metrical Psalms. Educated at Eton, he received his M.A. degree at Cambridge, being a Fellow of King's College. He succeeded John Fox in the curacy of Highgate; wrote a poem commendatory of Foxe's "Book of Martyrs," in which work he was concerned; also the preface and conclusion to the "Testaments of the Twelve Patriarchs," of which he was esteemed the translator, as well as several other works.

WILLIAM SEIDES was also in partnership with the aforesaid John Day. In the latter part of his life, he assigned his patent rights, with his working plant, to Henry Denham, whereupon

certain members of the Stationers' Company, by petitions to the Privy Council, endeavoured to destroy the monopoly conferred by patent, urging that the printing of special books, now restricted to the King's (or Queen's) printers, should be open to all. At length the dispute was compromised by the privileged printers granting certain allowances to the Stationers' Company for the expenses attending the petition and for the future maintenance of their poor.

HUMPHREY POWELL, of Holborn Conduit, removed in 1551 to Ireland, printing being there first introduced by him.

THOMAS MARSH, near to St. Dunstan's Church, had the monopoly of printing Latin school-books, of which the Stationers' Company complained to the Lord Treasurer.

RICHARD WALKINS and JAMES ROBERTS, of Cheapside, had a patent for printing Almanacks. Walkins, while Warden of the Stationers' Company, gave up his right in the Almanack for the benefit of the poor of the said Company.

JOHN CHARLEWOOD was noted for the many specimens of type he used, the charm of variety being appreciated even in his day.

NICOLAUS YETWEIRT, law printer, was Clerk of the Privy Seal and French Secretary to Queen Elizabeth.

CHARLES YETWEIRT, Esq., son and successor to the last-named, was likewise French Secretary and Clerk to the Signet at the Court of Elizabeth, and had a thirty-years' patent for printing all books concerning the laws. He survived his father but one year, and was succeeded by his widow, whose monopoly met with strong opposition from the Stationers' Company, a part of its creed apparently being, "Greed before Gallantry."

ROBERT WALDEGRAVE, who began practising the art in 1578, subsequently, through printing Puritanical works, involved himself in troubles which compelled him to seek safety in flight. In Wales he found refuge, and, being of good lineage, and moreover befriended by persons of influence, he outlived his troubles, and was eventually made printer to James the Sixth of Scotland.

GEORGE BISHOP, deputy-printer to Elizabeth, became an Alderman of London. Being one of the large-hearted, among other legacies he left £6 per annum to his Company, £6 per annum to Christ's Hospital, and £10 per annum, for ever, towards maintaining preachers at St. Paul's Cross.

JOHN WOLFE was City printer in 1581; had a contest with the Stationers' Company in reference to the privileges granted to certain printers under letters patent, Wolfe claiming the right to print any lawful book, the Royal prerogative notwithstanding; "and to that end," says Stowe, "had incensed the popularity of London, as in a common cause, somewhat dangerously."

ROGER WARD, like-minded with Wolfe, took the bull of monopoly by the horns and earthen it. Both the Crown and the Stationers' Company were by him set at open defiance. All kinds of books he printed at his own evil will and pleasure. The Master and Wardens of the Stationers' Company, exercising power vested in them, attempted to search his printing-office, but was resisted by his wife and workmen. Commissioners were appointed by the Royal Council to arrange with him; but he persisted in his contumacy, and even withheld fulfilment of two bonds into which he had entered with the Crown.

WILLIAM CARTER was another daring printer, and put into type many publications of a treasonable kind. On the 10th of January, 1584, he was placed in the dock at the Old Bailey,

convicted of high treason, and (those being the days of long ropes and short shirts) he was next day hung at Tyburn.

HUGH SINGLETON was more fortunate. He had printed a seditious book, entitled "A Gaping Gulph, to Swallow up England by a French Marriage," for which the writer, John Stubbs, and the publisher, William Page, as well as himself, were called to account. Having been convicted, by a law of Philip and Mary, they were sentenced to lose their right hands—a summary and efficacious means of making writing and printing a work of difficulty on the part of the convicts. The sentence was fulfilled in the case of author and publisher, who were severally deprived of the dexter hand at the wrist by a butcher's knife and a mallet; Singleton, however, through the intercession of friends, obtained remission of the sentence.

HENRY BYNNEMAN, an eminent printer, was, in 1580, admonished at the bar of the House of Commons for breach of privilege in having printed a certain book, in which a member of the House, Mr. Hall, of Grantham, reflected upon and reproached the Speaker (Sir Robert Bell) and other members. Hall himself was committed to the Tower for six months, and, until he made a "retaliation" to the satisfaction of the House, to pay five hundred marks, and be excluded from Parliament.

THOMAS TALLIS and WILLIAM BIRD, Gent.—the last-named belonging to the Chapel Royal—were granted letters-patent by Elizabeth to print music for twenty-one years.

So common at this time had become letters-patent, that the subject formed a topic of debate in the House of Commons. When the monopoly of making cards was mentioned, we are told Sir Walter Raleigh blushed. "A list of patents having been read, one member stood up and asked, 'Is not bread there?' 'Bread!' says one. 'Bread!' says another. 'This request seems strange,' says a third. 'Not in the least,' rejoined another, 'for, if not speedily prevented, a patent for bread will be procured before the next session of Parliament.'

CHRISTOPHER BARKER and ROBERT BARKER, father and son, were descendants of Sir Richard Barker, King-at-Arms, and enjoyed Royal favours in an eminent degree, letters-patent having been granted by Elizabeth in consideration of the father's great improvements in the art of printing. To Robert a special licence was granted for printing all the statutes during his lifetime. For amending or correcting the translation of the Bible he paid the large sum of £3,500, and the right of printing it was reserved to him and his heirs. This great family, however, experienced vicissitudes of fortune, this same Robert Barker having been a prisoner for ten years in custody of the Marshal of the King's Bench, and died there.

JOHN NORFOLK, Esq., Queen's Printer in 1593, gave £1,000 to the Stationers' Company, to purchase lands to the value of £50 per annum, and part to be lent to poor young men of the Company. He also gave £150 to the parish of St. Faith, under St. Paul's church, to purchase £7 10s. yearly for ever, to be given to the poor. In 1610 he introduced printing into Eton College.

JOHN WINDETT, a good printer, succeeded John Wolfe as printer to the Hon. City of London. He is said to have continued in business sixty-six years—1585 to 1651.

The above names comprise only the most notable among the pioneers of typography in London. Many others might be added, but the Provinces claim the little space remaining to chronological descriptions.

Having thus recorded the several periods at which printing was introduced into the principal towns and cities of the United Kingdom, and narrated some of the chief incidents connected with the biography of certain patriarchs of English printing, our purpose is accomplished. That object was to collect within a narrow compass a fund of information hitherto accessible to comparatively few among the members of our craft; and as there is not a town of any importance in Great Britain or Ireland without a Printing Press, it cannot fail to happen that there will be craftsmen to whom such information will be at once new and edifying. Conscious that the task might have been undertaken by abler hands, for our having attempted its performance the only excuse that need be offered is the apprehension we had felt that the Quarecentenary of English Printing might otherwise have passed unnoticed. Those who wish to become more intimately acquainted with England's First Printer, should provide themselves with the "Life and Typography of William Caxton," compiled from original sources by William Blades, and published by Joseph Lilly, Covent-garden, London, 1861. It is a valuable contribution to the literature of our ennobling art.

Our noble Art, in its infancy, was encouraged and fostered by those great ecclesiastical institutions of which Westminster Abbey is the representative. Here Printing had its cradle. In several cities and towns within the Kingdom where any extensive religious house existed, printing-offices soon arose. The Abbey of St. Alban's, as we have seen, had its printers among the Beneficent monks in 1180.

So had Oxford. For a space of nearly sixty years, however (1527-85), there was an unexplained interregnum, which was terminated by the Earl of Leicester, Chancellor of the University, providing a plant at his own expense. The University Printer in 1585 was JOSEPH BARNES. In 1658 SAMUEL CLARK, a Master of Arts, was elected Architypographus.

The sister University was in this instance, as it has been upon occasions more recently, astern of Oxford. JOHN SIBBERCH, who claimed to be the first Greek printer in England, settled at Cambridge in 1521. But, as at Oxford, there appears to have been a suspension of printing for sixty-two years—from 1522 to 1584. It was then revived by THOMAS THOMAS, M.A., previously of King's College, and who, besides being printer to the University, was author of a Dictionary bearing his name.

Canterbury had a printing-house in the sixteenth century, but the exact date is not recorded.

At York one was introduced in 1509 by HUGH GOES, supposed to be the son of an ingenious Dutch printer, and who subsequently removed to Beverley, eventually migrating to London. His first publication at York was the *Pica*, or *Vic*, an old Liturgy used in the Cathedral.

Tavistock received the art in 1525 through THOMAS RYCHARD, an inmate of the monastery, where, among other productions, was printed the Statutory Laws.

Ipswich had its press in Cardinal Wolsey's time (1538), the premier printer being JOHN OSWEN.

This gentleman, or another of his name, had a special licence for printing at Worcester about the same period; and in 1553 he was appointed printer to the principality of Wales.

Greenwich had a printer in 1554.

Norwich had an influx of foreigners from the Low Countries in 1565. By some of these printing was introduced; and ANTHONY DE SOLMENE, one of the number, was rewarded with the Freedom of the City in acknowledgment of his share in the event.

Moulsey, near Kingston, in Surrey, was early in the sixteenth century unenviably distinguished for the scurrilous pamphlets issuing from its press. Their contents, we are told, related to "ecclesiastical discipline, and never-ending cavils and disputes about rites and ceremonies, in a snarling and ridiculous manner; and the public printing-presses being shut against the Puritans, some of them purchased a private press." Driven eventually from Moulsey, it found for a while a halting place at Fairsley, in Northamptonshire. Persecution drove it thence to Norton, and afterwards to Coventry; from Coventry to Woolston, in Warwickshire; and from thence to Manchester.

Priests from the Low Countries, self-exiled by reason of persecution at home, are said to have introduced printing into Scotland. WALTER CHAPMAN, having letters patent from James the Fourth, in 1507 printed his first book in Edinburgh. It was entitled "The Porteus of Nobleness." In 1509 the Breviary of the Church of Aberdeen was printed there, and a second part in the year following.

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